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I

INDIVIDUAL TRAINING IN AMERICAN COLLEGES [1]

Except the establishment of the preceptoral system at Princeton, perhaps the most striking recent piece of constructive criticism of conditions in our American colleges has come from outside the college itself. The author is intensely in earnest. His object is not to charm his readers, but by vehement reiteration to startle them into a realization of conditions as he sees them. He has made up his vocabulary as he has gone along, which is a good thing; for the ordinary educational terms have been worn so smooth by overuse that few of us realize that they can possibly have anything to do with real, living needs and opportunities. He speaks of a college as if it were a factory, the entering classes being the raw material, the boys who are "busted out" the waste product, and those who graduate, the finished product—with far too small a proportion of *firsts* and even *seconds* and far too great a proportion of *culls*.

Altho, so far as I know, Mr. Birdseye has had no formal pedagogical experience, he has things to say which, whether they make pleasant reading or not, make very worth-while reading, particularly for those of us who, from our position inside the focus, have apparently failed to see in true perspective what has been going on about us. He makes a pretty strong case (indeed the whole book is in the form of a legal brief), for his unflattering conclusion that the college faculties are not

[1] ***Individual training in our colleges,*** by Clarence F. Birdseye. New York: The Macmillan Company, 1907, xxxi + 434 p. $1.75.

capable of bettering the present unsatisfactory condition themselves, that the solution lies rather in the hands of parents and alumni, particularly the alumni of the Greek Letter Fraternities, acting thru their local undergraduate chapters.

Mr. Birdseye came to realize the change in college conditions since his own graduation from Amherst in the seventies thru coming into close relation with the undergraduates in his college fraternity. From this specific starting-point, he made a study of conditions thruout the country and became convinced that, while many men are giving earnest thought to the improvement of these changed conditions, they all make the same mistake; they study the question from the point of view of the institution rather than from the point of view of the individual student. In the mass of material which he has collected, and from which he has made his book, he has always kept this distinction in mind. The result is that while there is much, particularly in the historical part, that is not in itself new to college and university men, it comes to us, so to speak, from a new angle.

In the preparation of his book, Mr. Birdseye followed a plan which, in these days of machine composition, when the holding of standing type is no inconvenience to the printer, might well be followed by authors of similar works. He had the whole material in more or less rough form thrown into type and distributed the proofs pretty widely among men who from first-hand experience were each in a position to criticize one or more aspects of the problems he discusses. In this way he obtained before publication a number of suggestions as to additional material, changes of emphasis, and the correction of minor errors, which ordinarily come to an author, if they come at all, only after the publication of a first edition.

The following brief and necessarily inadequate summary of the book will give some idea of Mr. Birdseye's conception of the evils in present-day conditions and their cause, and his suggestions for their improvement.

It is divided into four parts. The first "The ecclesiastical period of our colleges," is made up largely of quotations from the old records, many of them frankly amusing baits to lure

the reader on to the more serious chapters. The author's main points are that the earliest American colleges were nothing more than boarding schools. The entrance requirements were practically negligible, pupils were graduated at from fifteen to seventeen; the curriculum, however, was distinctly professional, primarily for the pulpit and secondarily for the bar. The colleges were miserably poor, discipline was rigid, the curriculum was narrow, but the boys were intellectually the pick of the nation, they were desperately in earnest, realizing as they did, the social and professional advantages of a college degree. The instructors were men of mark, with much of the real apostolic spirit; from the small size of the classes, the difficulties of leaving the college town, the absence of other diversions, and above all from the fact that they were recognized by the students to be *in loco parentis,* the faculty exercised a constant and effectual influence on every student. The colleges might be, and were, narrow and bigoted, but they really trained their students.

In Part II, "The age of university buildings," Mr. Birdseye, always emphasizing changed conditions, so far as the student as an individual is concerned, shows the influence of the first German trained college teachers, and of the social changes since the Civil War caused by immigration, the growth of population, and the immense increase in industrial resources. He shows the development of the secondary schools in size and scope with the corresponding increase in college entrance requirements. So much of the early college course has been moved down into the high school that, in age and knowledge of the world, the college students of a century ago correspond more closely to our high school students than to our college students.

He makes clear, also, that not only because of the greater proportion of the population that is being college-trained, but also because of the immense development of home education of various kinds, the college graduate is no longer in the tactical position of advantage that he held earlier in our history.

Then he takes up the result of the changes—present college conditions. His discussion of athletic conditions is drastic, but

since intelligent appreciation of the state of affairs here is much more general than even a year or so ago, and since, taking the country by and large, the athletic problem, with its accompanying moral problems, is in a fair way of being solved, we need note here only the pedagogical lesson of the professional coach. The reason that the coach exercises so potent an influence over his candidates, in many cases the discipline in athletics forming the most real *education* the student receives at college, is that he, and sometimes he alone, studies and knows his men as individuals. "How successful would that varsity team be," asks Mr. Birdseye, "that would be selected thru a marking system by a committee which did not know the candidates by name or sight?"

A chapter on religious conditions shows that here as elsewhere the tie between student and faculty has been loosened. In the final chapter, based largely on the "Briggs Report," to the Harvard faculty in 1903, the weakness of college training today is summarized: the idleness, procrastination, and general irresponsibility, cramming, the outside quiz, the code that permits cheating at examinations, the bad influences of snap culture courses, the lack of candidates for college honors, the weakness of the lecture system and particularly of the present marking system in large courses, the false importance given to bookkeeping technicalities, credits, diplomas, etc. All these are laid to the loss in the colleges of individual training. Men are sending their sons to technical schools, even tho they are not to follow technical professions, because these technical schools have in their laboratories and shops the individual training which the colleges have lost. The only reason, Mr. Birdseye feels, that the colleges have not gone into bankruptcy, squeezed out of existence between the secondary school and the professional school, is a certain sentimental sanctity which, as a result of past good work, they still retain in the public mind. Of course, like the lawyer he is, he gives, except for a qualifying paragraph or two, only one side of the picture. The past was doubtless not so white nor the present so black as he says. Much that he deplores exists at Oxford and Cambridge, where, whatever else it may be, the training

is individual. In some colleges, and in many departments within colleges, his words do not apply, but all in all, there is more ground for what he says than there should be or need be.

Part III deals with the agency that Mr. Birdseye found ready to his hand as an instrument for good, the Greek Letter Fraternity. The early college carried on itself the, so to speak, domestic education that had already been begun in the student's home life—an intensely important part of his whole education—and now the fraternities have taken up the work that the colleges have unconsciously dropt. Mr. Birdseye calls the present-day fraternity "the answer of the students to the problem of finding at least a partial substitute for the college home life which came from the former personal touch of the instructor—a problem which the faculty have confest themselves quite unable to solve."

> In the evolution of recent years the college secret society has become the Greek-letter fraternity, and the Greek-letter fraternity has past into the college home of a large proportion of our students, especially those who require to be firmly and wisely guided thru their four crucial years. These college homes contain a very large majority of those who have plenty of money to spend, and hence have means and opportunity to gratify low tastes and passions. They contain, therefore, the very elements that, misunderstood or unguided, can make the most trouble and do the most harm. But they contain also many of the stronger men of our institutions, men of high breeding and social standing, who control college activities and mold college opinion. These homes are, therefore, centers of potential good quite as much as of potential evil. If we abandon them to their own devices, they are capable of almost any harmful results. If we lift them to the levels which they can reach, we have the most available and powerful instrument for good in the college lives of our students.

This taking on by an organism of other and more important functions than its original ones is what is constantly happening in life—the gullet pouch of the batrachian became the lung of the reptile when animals came up from water to dry land, and the Trade Gilds of London and other medieval cities took up, when the need came, the burdens of municipal government. It would not be easy to exaggerate the importance to college education if the fraternities, with their 200,000 initiates, past and present, and their 750 residential chapter houses, could in

our academic organization be made to assume seriously, and to perform efficiently, this much-needed domestic function.

In Part IV, "The remedy," Mr. Birdseye gathers up the threads of his argument and makes his plea. There is an introductory chapter on "Life's problems and how to solve them," showing the need in our highly complicated civilization of the "Problem-solver" and the prizes the world stands ready to give him; and averring that today the training of problem-solvers is itself too great a problem for the college faculty to solve alone.

The next chapters of the book are rather scattered; they criticize various weaknesses in college administration, the handicaps of the college man therefrom, the responsibilities and duties of alumni, the need of an early decision by the student as to his life work.

Then the author returns to the really vital part of his theme, the opportunity of the college fraternity to give the individual training neglected elsewhere. He draws a fine picture of the really good fraternity chapter—the strongest ally of the college faculty. Here, under the sympathetic oversight of graduate members, in an atmosphere of informality and good fellowship, the education of the freshmen by the upper classmen and that of the upper classmen by their responsibilities is going constantly on. Mr. Birdseye's description of the plan which, under his own initiative, has actually been put into operation in one fraternity to insure the maintenance of its chapters at their highest level of efficiency and usefulness is, it seems to me, the most important thing in his book. I shall quote it practically in full:

> The organization of our fraternities is seriously weak in one respect: It is entirely voluntary and does not provide a single high class officer who is liberally paid to supervise the whole, and relieve the hard-worked voluntary worker of unnecessary strain and at the same time detect and strengthen any weak point that develops in this splendid system of correlated college family homes. The fraternity seeks to draw upon the time and help of its very best alumni. Yet we have failed to see that we must apply the same rule to these and all other alumni that they apply to others in their own business; they should be called on only at the right time, when they can do some good which other agencies can not accomplish; they must be kept for the best work, or for that which they can do better

than any one else. But this necessitates the employing of some member of the fraternity who can take charge of the details of its affairs, be an authority that can be called upon by the undergraduates, the alumni, and the council, and be the trained expert of the whole organization. . . . The weakness of the present form of central organization is that there has not been grafted upon it at least one mature, skilled, and well-paid secretary, devoting his whole time to the affairs of the institution and insuring that they are properly handled. With so large a number of alumni the expense would be merely nominal. It is true economy to maintain such an official, for oftentimes the local chapters run into debt or get into a bad way, for one cause or another, so that their alumni have to put their hands in their pockets and pay considerable sums and devote much valuable time which would never have been required if the affairs of that chapter had been constantly and carefully looked after. This will surely happen in the ordinary chapter in the course of a considerable number of years, unless we have some strong central organization and a thoroly competent paid official.

. . . . . .

Recently one of the older fraternities [Chi Psi] after much time spent in the consideration of the student problem from the students' standpoint, thoroly imprest with the lack of proper provision for Individual Training in our institutions of higher learning, realizing the need of the warmest coöperation of the alumni with the undergraduates to that end, and recognizing its duty to get for each undergraduate member as far as possible everything of good that his college course might hold for him, determined to test thoroly, for at least three years, the experiment of a general secretary who should devote all his time to working among its graduates and undergraduates thruout the country. . . . During his first year this secretary spent forty-one weeks out of fifty-two in the field, at the various chapter houses and among the alumni. With a remarkable facility for remembering names and faces, and with a large previous acquaintance with the fraternity members, he has already become personally known to most of the alumni as well as to all of the undergraduates. The opportunity for comparison between various colleges and the conditions in various chapters is decidedly valuable. He soon detects a weak spot and remedies it at once or refers it to the proper person, graduate or undergraduate. Having had good business training, he is able to introduce this important element into chapter affairs. He can see how certain problems are solved in another college or chapter, and apply their remedy wherever needed.

The objections that will be made to this plan are:

1. That the undergraduates will not tolerate such interference with their affairs, but will consider and treat the secretary as a spy;

2. That this work will tend to lessen the interest of the alumni, since it will relieve them from their former responsibility for their respective chapters;

3. That enough money can not be raised to support such an officer; and

4. That the proper man can not be found and employed to make a success of such a delicate and responsible position.

If the right man can be found. and every fraternity contains several such, all of these other objections will prove groundless.

The difficulty and delicacy of the secretary's duties should be thoroly understood. Diplomacy, candor, integrity, tact, and wisdom of the highest character are required. He must be able to deal with undergraduates and graduates, faculty members, and all others whose influence may touch the lives of his younger brothers. This is not a boy's work; it requires a man, and the best man that we can get.

The advantages of the general secretary are exceedingly great in that he knows the undergraduates, is well acquainted with the alumni, is able to detect any weak points or hidden trouble, and can advise at once with the proper alumni and take the necessary steps to remedy the difficulty. The alumni join more willingly in the work, because they feel that they are carrying out an intelligent plan for an important educational purpose, and that they will be called upon only when they are needed. Beginning with this secretary the fraternities, especially the smaller and stronger ones, can soon go on to a more complete organization along lines that will insure Individual Training for their undergraduate members, and that clean and inspiring home life in college that is our only hope if we would produce the kind of strong, cultured problem-solvers that the early colleges turned out in such numbers.

This experiment, if it may be said to be still in the experimental stage, is being closely watched by men in other fraternities; one or two of the more important have decided to follow the example, and to the others, altho this particular scheme may not, for one reason or another be followed out, there is coming a realization, which I think is destined to be most fruitful, of the educational responsibilities and opportunities of the Greek Letter Fraternities.

After a chapter on the needs of the professional spirit, " the spirit of the veteran," comes an afterword of recapitulation and general advice, always in the terms of individual training—to the young man about to enter college—to the undergraduate —to parents, faculties, trustees, and alumni—and finally to fraternity alumni. The closing sentence gives the keynote of the book, " It is the college home life, whatever it is, that will dominate these four years and thereby mold the individual, and we are each of us factors in that home life."

Mr. Birdseye's book must not be taken as the whole gospel. For instance, there is not a word in it from cover to cover as to the joys of scholarship for its own sake, and yet I should not like to think that there are no parents and no boys to whom

at least as strong an appeal could be made thru this as thru the promise of worldly success that comes thru efficiency in practical matters. We all of us know cases where successful training for efficiency has come in the professional school or in the office, after the man's undergraduate course was over, but do we know of many cases where the capacity for real enjoyment in things of the mind, which has so much to do with subjective success in life, as contrasted with objective, has come after the chance to acquire it has been neglected in college? It was on its scholarly side, by the way, that Edward Everett Hale and other fraternity alumni sought, fifteen years or more ago, to enlist the influence of the Greek Letter Societies. The Alpha Delta Phi Fellowship at Amherst was founded as a result of this movement.

Forgetting that they are all of them college alumni themselves and most of them fraternity alumni as well, he consistently underestimates what the college teachers and administrators themselves have it in their power to do, when once they are made to realize the need of action, and as a matter of fact, they are beginning to do so. President Jesse of Missouri, for example, said in a recent address:

> It is a shame that every university—possibly some of them already do it—does not have on good salary one layman at least with a head full of common sense, a heart full of righteousness, slightly connected with teaching, but really free for efforts to raise to the highest the life of the students. He ought to be capable of moving, like pawns on a chess board, the Y. M. C. A., every local church, the fraternities, the University Club, the President, the Deans, the Teachers, the Athletic Association, and every other power in the community. Such a man, giving a course of (say) three hours a week in Ethics and the rest of his time to this work, could accomplish much. As his work grows, he ought to have assistants."

Nor, on the other hand, is everything gospel that is in the book. When he leaves the shelter of the Briggs Report, Mr. Birdseye's pedagogical recommendations, while always readable, are not, it seems to me, always sound. Apparently he believes that his is about the only voice crying in the educational wilderness, and for that reason he feels it his duty to record his views upon every possible aspect of collegiate education.

Upon his own ground, however, the place in our educational machinery which the Greek Letter Fraternities have already taken and the higher place which, thru the influence of their alumni, they may be made to take, on this ground, Mr. Birdseye speaks with the authority of the constructive reformer and for this reason, if for no other, his book deserves and should receive the careful study of every man who has at heart the welfare of the American college. The brief introduction of the United States Commissioner of Education, which I quote in closing, shows how Mr. Birdseye's book has appealed to at least one such man.

> One does not have to agree with all that is said in these pages to be imprest with the weight and significance of the discussion which they present. They deal with vital, present-day problems in the life of our colleges. As I have read the advance sheets of the book, the conviction has grown upon me that the author is moving toward a very real and far-reaching improvement in our college life. I believe the changes which are proposed will work mightily for such improvement, and I should not be greatly surprized if in some institutions they went to the length of a revolution in the standards of the student body. The author's own intimate connection with the actual working-out of such plans as are proposed gives to what he says the touch of actuality, and takes it out of the range of merely theoretical discussion. I hope the book will be widely read, and that it will lead to the doings of things in the direction which the author has indicated.
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> F. P. KEPPEL
>
> COLUMBIA UNIVERSITY

II

VOCATIONAL WORK FOR THE ELEMENTARY SCHOOL

In the Report of the Committee on Technical and Industrial Education, submitted in April, 1906, to the Governor of Massachusetts, it is stated that the Committee found on investigation, "A growing feeling of inadequacy in the existing public school system to meet fully the need of modern industrial and social conditions. The opinion was exprest by many speakers that the schools are too exclusively literary in their spirit, scope, and methods. When there was any pronounced opinion there was a vague feeling of dissatisfaction with results. They [the people] hesitate to criticize, and are far from desiring any revolutionary change, but they are inquiring with open minds whether some modification may not be possible, by which the schools may reach in a more practical way the great body of children and youth."

This feeling of the inadequacy of a uniform course of study to meet the needs of a large number of children is indicated in other quarters in an unmistakable way. In any large group of pupils of the same age there are marked differences in mental caliber. Some who are prepared to do excellent manual work fail to be attracted by work which demands much mental activity, and fall behind in classes where a high standard of mental achievement is set. It is a well-known fact that a very large majority of the boys who enter the public schools leave without graduating, to seek positions in the industrial world. The elementary course of study, as it is now usually arranged, makes no adequate provision for these pupils in the way of preparation for a vocational life, nor does it seek to retain them in the school by work of a character which would serve to hold them sufficiently long to give them vocational training

suited to their needs. For these pupils it is believed that work could be arranged much better suited to their requirements than that which is now offered.

The present article considers the necessity of offering some form of vocational training in the elementary school, and recommends that for certain schools a modified form of the course of study be arranged; such course to permit vocational training in the seventh and eighth years. The recommendations in detail are given on a later page, while the reasons therefor are presented under the following heads:

1. The course of study as at present organized is not well adapted to meet the needs of pupils preparing for a vocational career.

2. Many pupils leave before completing the course to enter the vocational field.

3. Those who seek admission to the trades are ill taught and ill paid.

4. Preparation for vocational work could be given with advantage in the elementary schools.

5. The establishment of a preparatory vocational course should be undertaken in the immediate future.

1. *The Course of Study as at present organized is not well adapted to meet the needs of pupils preparing for a vocational career*

(*a*) That which is termed "The elementary curriculum" lays its chief emphasis on subjects of general culture value. None of the studies, as presented, touches in any direct way the industrial environment of the pupil, nor do the subjects, except in certain phases of the number work, concern themselves directly with problems which appeal as concrete and useful to one of vocational bent. The course is one dealing much with theory but comparatively little with practise.

(*b*) The course places its emphasis on mental rather than on manual achievement. This follows as a natural result of its organization. The pupil who is brilliant mentally prospers and has his work commended, but the pupil who leans toward vocational work, and who lacks ability or interest in

mental performance comes in for serious criticism. The course as a whole stands for a training of the thinker rather than the doer, the time given to manual performance being but a very small fraction of that given to school work as a whole.

(*c*) The manual work which is now offered in elementary schools is developmental and socializing; the purpose of such training is general and not special. Manual training as an element of the elementary curriculum has an important rôle to play, but this rôle is not vocational in character. As a subject it is one to be pursued thru the entire elementary course. It looks to a general training of the pupil in intelligence and skill and offers its advantages alike to pupils bright and dull. It may properly prepare for further study of an industrial character, but it is not itself to be developed on vocational lines.

Vocational work, on the other hand, should be special and intensive. It should give those pupils who have a general bent toward the arts much direct training in shop methods and shop standards. Vocational training should follow the general manual training of the elementary schools. It should rise out of such training, and look not to general development but to specific development of the pupil's interest and ability. Manual training is part of a general educational system to be pursued in the early years by all; vocational training is part of a system of industrial education to be pursued by those desirous of entering the trades. The aim of the latter should be to give the pupil insight and skill that he may later make an intelligent choice of some specific vocation.

2. *Many pupils leave the elementary school before completing the course, in order that they may enter the vocational field*

These pupils will be found chiefly in two classes:

(*a*) Boys who are not mentally equipped to complete the course as it is at present arranged for the higher grades. These form the so-called "over age" pupils of the lower classes. Slower than their mates they are left behind in the race and

take as early an opportunity as possible to leave the school with its (for them) small interest.

It is these pupils, who, having reached the age of fourteen, secure their "work papers" as soon as the law permits. The school palls upon them and they escape from it with pleasure. It is, however, little to be wondered at that later, with their very inadequate preparation for life, they find it difficult to secure satisfactory and permanent employment.

(*b*) Others who leave without graduating are pupils of strong vocational inclination who are able to undertake work of a difficulty proportionate to their age and experience, but who are dissatisfied with the school's curriculum, and seek every opportunity to place themselves directly in touch with constructive operations. These pupils leave in numbers during the sixth, seventh, and the early part of the eighth year. Brighter than their companions before referred to, they would undoubtedly profit to a very high degree if they were given vocational work of a character appealing to them.

3. *Boys who seek admission to the trades are ill taught and ill paid*

(*a*) The boy from fourteen to sixteen is not wanted as an apprentice or learner in the trades. He is too immature physically to be able to meet the demands of vocational life. He can only serve as an errand boy, or if admitted to a factory can be allowed to perform some routine of unimportant mechanical work, but as errand boy, "feeder," or "helper" he receives practically no instruction and is paid a very trifling wage.

(*b*) The years between fourteen and sixteen are waste years. This is the judgment of the compilers of the Massachusetts Report. In the words of the report, "For the great majority of children who leave school to enter employments at fourteen to fifteen, the first three or four years are practically waste years so far as the productive value of the child is concerned and so far as increasing his industrial and productive efficiency. The employments upon which they enter demand so little individual skill that they are not educative in any sense. For these

children, many of whom now leave school from their own choice at the completion of the seventh grade, further school training of a practical character would be possible if it prepared for the industries. Hence any scheme of education which is to increase the child's productive efficiency must consider the child of fourteen."

(*c*) There is a serious economic loss both to state and to worker under these conditions. The boy who leaves early, loses school training on one hand, and is unable to recompense himself by adequate technical instruction on the other. With such defective preparation it is not to be expected that he will develop into a workman of great value.

It is to be noted in this connection that in the State of Massachusetts twenty-five thousand children were found by the Industrial Commission to be in the vocational field between the ages of fourteen and sixteen. The great majority of these children were drifting about from one position to another, vainly endeavoring to secure some permanent foothold. Examination would undoubtedly reveal a similar state of affairs in other states. The sum total of the wasted years of these children is enormous. Its results in loss are of the greatest importance. The establishment of proper vocational training would aid to prevent such waste.

4. *Preparation for vocational work could be given with advantage in the elementary school*

(*a*) The years for such training are practically the sixth, seventh, and eighth years of the elementary course. These are the years, as previously noted, when the pupils are most prone to leave school. By the sixth year the difference in mental capacity and interest may be fairly determined. If the interests of the pupils in vocational work can be met at this stage, it may reasonably be expected that a very considerable number of them will be induced to remain in school until they have completed the eighth year.

(*b*) The preparatory vocational course referred to should be offered as an elective, not as a required subject; *i. e.*, it should be offered in certain schools of a district so that those

pupils who desired to follow such course might do so, while the others pursued the regular curriculum. In initiating the plan it would appear desirable that the school or schools first selected should be in neighborhoods where the defection in the sixth and seventh years is now most marked.

(*c*) The form of vocational course which is contemplated is one which offers considerable training in hand work in the sixth year, with additional emphasis on such work in the seventh and eighth years. This hand work should include bench work in wood and practise in pattern-making and turning. With this should be offered related lessons in English, penmanship, geography, history, physics, arithmetic, and drawing. All of these subjects should be developed from the vocational point of view, with particular emphasis upon the parts they have to play in furthering the students' practical knowledge of the industrial world.

While the pupils should be called upon for little home work, it is believed that they would profit by a school day longer than that now required. In any occupation they would be required to work at least eight hours a day. In the vocational classes they might well be required to receive seven hours of instruction and practise each school day. So arranged, and without being unduly fatiguing, a two-year course would offer extended and valuable training in both theory and practise.

Most important in the organization of the work is the question as to the teachers to be employed. In the technical branches these persons should be specially qualified by actual trade experience. They should be skilled workmen of high intelligence that they might be able to hold up before their boys the best standards of their crafts.

The course should offer abundant practise both in free-hand and mechanical drawing. The free-hand should include much quick sketching from familiar forms, the practical rules of perspective, and many problems requiring the translation of plans and working drawings into properly foreshortened sketches " in the round." The general aim of the work should be to give the pupil power to determine proportions rapidly and accurately, and a skill sufficient to enable him to represent

objects in three dimensions, as they appear variously turned and foreshortened. This knowledge of free-hand drawing will stand the prospective artizan in very excellent stead.

The working drawing should include both the making of working sketches and the use of instruments. As in the case of the free-hand drawing, the emphasis should be strongly placed on the practical phases of the work; elementary instruction in geometry should be included, but the chief aim of the course should be to lead the pupils to a point where they can intelligently and rapidly represent any simple piece of machinery in the form of a working sketch properly lettered and dimensioned. They should also be prepared to translate any working sketch into a careful mechanical drawing on the one hand, or a freehand perspective drawing on the other.

The shop work of the course should aim to familiarize the pupils with the use of working tools, and with the handling of the speed lathe. It is believed in this connection that no work will serve better as a general vocational training than that of pattern-making. Such work should be offered not with the expectation that the pupils will become pattern-makers, but with the idea that they will, thru the many operations required, learn and apply the principles of joinery and become familiar with the use of a simple machine like the lathe—a type of all machines requiring dexterity and skill in its handling. It would be quite possible to offer in the last year of the course work in metal-turning (brass) on the speed lathe, and forms of chipping and filing of metal at the vise. The great accuracy required in the latter work and its fundamental relation to many mechanical operations would make it a highly useful method of introducing the pupil to representative forms of industrial practise. It is to be noted that all of the different types of work suggested are entirely within the physical ability of pupils between the ages of twelve and fifteen.

A course thus organized would seek to teach no specific trade but would lay a foundation for all manual occupations. The exercises in drawing and in wood and metal working would equally well serve to acquaint the prospective apprentice with the principles of shop work, and with typical forms of

tool manipulation. His introduction to the lathe would inform him in an elementary way in regard to power machinery, and would lead him in a few weeks to a far greater knowledge of machines than he would gain in as many months while working in a factory as a "feeder" of some automatic stamp or drill.

5. *The establishment of a preparatory vocational course should be undertaken in the immediate future*

There is an undeniable demand both in the industrial and the school world for early action along the lines indicated. On the industrial side there is much complaint from manufacturers that skilled labor is becoming increasingly hard to secure, that the foreigner is usurping the place of the American artizan, and that the training in school of the boy who is destined to become a craftsman is not only unsuited to his purpose but directly tends to lead him from industrial to clerical fields. The necessity from the standpoint of the school has already been pointed out, and it is evident that some practical experience as to the success of the proposed plan would be of the greatest value. Such experience can only be secured by putting the plan into operation in some school or schools, where it might develop under favorable auspices.

It may be noted in this connection that a general movement in behalf of industrial instruction is developing over the entire country. In both the northern and southern states vocational secondary schools are being organized and exploited, while in the west a number of similar experiments are being undertaken. This unity of movement is in part a result of the study of school conditions, but far more a result of economic conditions. With several of the states of Europe engaged in the erection of most elaborate systems of industrial education, economists and students of affairs have not been lacking to point out the necessity of developing on our own part some systematic and far-reaching measures to meet the conditions which confront us. Says President Roosevelt in his address delivered at Lansing on May 31, 1907: "What the American workman has to fear is the competition of the highly skilled

workingman of the countries of greatest industrial efficiency. By the tariff and by our immigration laws we can always protect ourselves against competition of pauper labor here at home; but when we contend for the markets of the world we can get no protection, and we shall then find that our most formidable competitors are the nations in which there is the most highly developed business ability, the most highly developed industrial skill; and these are the qualities which we must ourselves develop."

6. *Outline of a vocational course for the elementary school*

The following is a tentative syllabus which presents in some detail the subjects and time recommended for the vocational course of study outlined above.

ENGLISH

6th year	Composition:	Oral and written. Reproduction; reports and descriptions; business letters.
	Penmanship:	Exercises to secure speed and legibility; business forms and copy.
	Reading:	From readers and other books.
	Spelling:	Selected words; use of the dictionary.
7th year		As above.
8th year		" "

GEOGRAPHY

6th year	United States and other countries of North and South America; reviewed with particular reference to resources, industries, and occupations, products, commerce, and means of transportation.
7th year	Europe, Asia, Africa, and Oceanica. Countries and chief cities, with particular emphasis on industries and occupations, products, commerce, and means of transportation.

HISTORY

6th year	American history from the discovery of America to the civil war, with particular emphasis on the industrial development of the country, on inventions and discoveries and their results.
7th year	American history from the civil war to the present time, with particular emphasis on the industrial development of the country, on inventions and their results.

Arithmetic

6th year Common and decimal fractions and their per cent equivalents; problems involving the mathematics of shop operations.

7th year Percentage and its application; simple interest; problems in mensuration, and others involving shop operations.

8th year Ratio and simple proportion; problems in inventional geometry, and other problems involving shop operations.

Free-hand Drawing

6th year Drawing familiar objects in outline; study of simple foreshortened faces, and quick sketches to give practise in judging proportions.

7th year Elementary principles of perspective practically developed. Sketching foreshortened cylindrical and prismatic forms in outline with practical applications in drawing from simple machine parts.

8th year Perspective drawings from various details of construction: frames, doors, etc. Many quick sketches of familiar objects followed by memory drawing of the forms in different positions.

Mechanical Drawing

6th year Elementary principles of constructive drawing; simple working sketches, lettering, and dimensioning.

7th year Working sketches and mechanical drawings; use of instruments; scale drawing; lettering and dimensioning. Perspective drawings developed from plans.

8th year Mechanical drawings from simple pieces of machinery; working sketches; ink drawings. Perspective drawings from plans. Various practical problems, especially in the making of well-made free-hand working sketches.

Workshop Practise

6th year Principles of elementary wood working. Practical exercises in joinery; simple useful models, with particular emphasis on accuracy of construction. Elementary exercises on the lathe. Use and reading of working drawings.

7th year Simple problems,—pattern-making, involving the use of the lathe. Special emphasis on care and sharpening of tools, and on methods of shop-work procedure. Study of simple specifications. Visits to shops in operation. Use and reading of working drawings.

8th year Exercises: Joinery and pattern-making, involving use of the lathe. Simple exercises in metal-turning and in chipping and filing. Study of working drawings, and simple specifications. Lessons in care of tools, and the elementary principles of shop economics and discipline. Visits to workshops in operation.

PHYSICS

6th year Properties of matter; forces and states of matter; study of mechanical powers, particularly in relation to industrial work. Mechanics of liquids and gases, illustrated with practical experiments.

7th year Study of heat and of the elementary principles of construction, of the steam engine and of the gas engine. Sound, laws of its production and propagation. Different types of telephones, light, source, and propagation; photographs, their nature and making.

8th year Electricity and magnetism: Nature of fundamental electrical apparatus used in the arts; cells, electro-magnets, dynamos, etc.; the chemistry of combustion; destructive distillation; manufacture of gases, slow and rapid form of combustion as in rust and explosive compounds. Power, and its transmission. All principles to be developed in direct relation to industrial problems.

NATURE-STUDY

6th year Study of tree growth, and uses of wood. Special emphasis on employment of wood in art and industry. Other plant products useful to man—cotton, linen, etc.; their methods of preparation and manufacture.

7th year Further study of principal natural materials used in art and industry; wool, coal, oil, clay, and principal building stones.

8th year Metals; their source of preparation. Nature of steel, methods of tempering and preserving; alloys, their composition and use; brass, Babbitt metal, pewter, etc.

BUSINESS LAW

7th year Elements of business law; nature of contract; relation of employee and employer.

8th year Partnership; legal forms; nature of lien, etc.

PHYSICAL TRAINING

6th year Gymnastic exercises and games, elementary lessons in hygiene, effects of alcohol and narcotics.

7th and 8th year as in 6th year.

It is suggested that the course be organized as indicated in the following time schedule, which contemplates seven hours' instruction each school day.

	Minutes per week		
	6th yr.	7th yr.	8th yr.
Opening exercises	75	75	75
Physical training	70	70	70
English	320	260	120
Penmanship	75	..	..
Geography	60	60	..
History	60	60	..
Arithmetic	180	120	120
Drawing, Free-hand	200	200	200
" Mechanical	180	180	220
Shop work	520	520	740
Physics	120	120	120
Nature-Study	120	180	180
Business Law	..	120	120
Unassigned	120	135	135
Total	2100	2100	2100

Conclusion

It is to be noted that this consideration deals entirely with preparatory vocational work. It does not offer any discussion of the apprenticeship system, nor does it undertake to solve the apprenticeship problem; *i. e.,* the specific training of artizans for particular trades.

It is recognized, moreover, that no school offering vocational training can hope to retain in its classes all pupils who enter them, for not a few will, by force of necessity, be obliged to go to work before completing the two years' course, while others, after they have had a few months of such training, will yield to the solicitations of employers and leave to become learners in some trade.

It is confidently believed, however, that even in the case of pupils who do not complete the course much good will result from a partial training under its provisions. They will thus get an insight into vocational work, will be led to see the advantage of specific training along such lines, and will be inclined to seek, in the form of evening trade school instruction, further knowledge of their respective occupations.

JAMES PARTON HANEY

NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION, NEW YORK

III

SYLLABUSES AND EXAMINATIONS IN PHYSICS[1]

In the course of a series of conferences on college preparatory subjects a distinguished teacher of science read before this Association a paper whose central theme was declared to be " More descriptive and less mathematical physics." In support of this theme the speaker stated that within twelve years the percentage of students pursuing the study of physics in the secondary schools of the United States has fallen from twenty-four to twelve per cent. of all the students in these schools. He further declared that the subject as at present taught "does little for culture and less for common sense; that it is good preparation neither for investigators nor engineers, and least of all for the ordinary citizen." The speaker then presented some dozen or more quotations from prominent educators who at one time or another had urged the humanizing and vitalizing of scientific studies, and concluded his paper with two specific recommendations "for the relief of high-school pupils and teachers:

(1) "That the teaching of physics and chemistry in secondary schools should be less mathematical and more descriptive.

(2) "That, in order to secure greater freedom in the teaching of high school physics, the official list of requirements should be increased by the addition of qualitative experiments, and that teachers should be free to choose from the whole list any thirty-five to present for college entrance."

So convincing were the speaker's statements that not a word of discussion followed his paper, and the Association at a later meeting adopted a resolution including his first recommenda-

[1] A paper read before the Schoolmasters' Association of New York and vicinity, November 10, 1906.

tion. This resolution was afterward reconsidered, and the question of its adoption was laid over until a later meeting should afford an opportunity for a more complete discussion, which it is the purpose of this paper to introduce.

In the hope of seeking out the causes of the present discontent, I have undertaken a study of the syllabuses and examinations that have seemed to exert the greatest influence during recent years. It would be futile to deny that there is rather general discontent with methods of teaching physics. On the contrary, we must frankly admit it. During almost a score of years, since Harvard University first issued its epoch-making list of experiments for college preparatory physics, it has been quite the fashion for speakers on educational subjects to bewail the passing of the old-time study of natural philosophy with its easy and interesting experiments all done by the teacher and enjoyed by the pupil; and of late a perfect cyclone, with its storm center not far from Chicago University, has deluged the country with leaflets entitled *A new movement among physics teachers.* Many scientific and educational societies scattered from San Francisco to New York have lent their names to the promotion of this movement, whose immediate object seems to be to enumerate the prevailing faults of physics teaching and to exhort those who receive the leaflet to forward to the sender suggestions for improvement and reform. Lest readers should be lacking in scientific imagination, the circulars contain a long list of questions to elicit suggestions that might not otherwise be thought of. Below are quoted some of the recommendations made for the simplification of the course. Numbers in parentheses indicate the number of writers agreeing upon each recommendation:

"By omitting either the parts that are largely mathematical (21) or the more abstract parts (17); or the less essential parts (20); or one whole division of the subject (13). We might also cut out descriptions of antiquated apparatus (3), fads (4), special rules (5), work belonging properly to the college (4) or to the technical school (5). We should introduced only the simplest and most necessary units (3); omitting the dyne, the erg, the poundal, etc. (7). We might also omit

the parts that are not easily understood (7), suppress all unnecessary detail from the text-books (3), and reduce the discussion of mechanics to half the space usually given it (2)."

In view of the fact that many hundred circulars were issued, including sixteen hundred mailed to individual teachers, it would not appear that any recommendation had an overwhelmingly unanimous support.

It is probable, however, that the writer of these circulars and the gentleman who addrest this Association at an earlier meeting have exprest an uneasy feeling shared by many who are more or less closely connected with the teaching of physics, and especially experienced by those who are laying great emphasis on the informational side of the subject, and who for this reason are treating the subject as a slightly advanced form of nature study with little regard for its disciplinary value. Teachers in normal schools and in other institutions for the training of teachers for elementary schools would naturally have but little sympathy with the somewhat rigorous and exacting courses of secondary schools. The aim of the physics teacher in the elementary school is to cultivate the power of observation. The teacher in the secondary school must lay much emphasis on the power to reflect and to reason. He must insist on much more thoro and accurate observation than the child of the elementary school is capable of, to the end that his students may think clearly and learn to make just inferences based directly upon their own observation and reflection.

Now it is true that in the study of physics a student may be compelled to give much more careful attention to the manner in which a thing happens, if he is required at the same time to note to what extent it happens. Moreover, he is much more likely to remember a general law or principle, if he is led to obtain with some degree of accuracy such data as made possible the original discovery of the law. I do not wish to be misunderstood as advocating the exploded theory that a student should be set the task of rediscovering laws. He should rather be led rapidly to repeat the steps by which some laws were discovered, that he may appreciate the method of scientific investigation and may have confidence in the results obtained.

Quantitative determinations not only help to fix qualitative relations in mind; they frequently explain common phenomena and experiences that qualitative observations can not explain at all. For example, qualitative observations show that boiling water is precisely as hot as steam. A simple quantitative experiment will show that steam contains and will give out more than six times as much heat as boiling water while cooling down to the freezing point. This accounts for the fearful scalding effects of escaping steam and for the enormous heat transference accomplished by a little water in steam-heating pipes and radiators. It also explains the great industrial economy of utilizing exhaust steam for heating buildings and for drying and cooking processes of manufacturing establishments. Moreover, a little practise in the measurement of heat renders the units of measurement familiar and does not leave them as mere abstractions to be learned book-wise and to be forgotten immediately. One is much more likely to remember what a calorie is if he has made a few measurements of heat in terms of calories. In like manner the meaning of the candle power as a unit source of light is better understood and better remembered if a few measurements are made on the efficiency of a common lamp or lantern. It is easier to remember two things than one if the two are logically related. This in a single sentence is my whole argument for retaining some work in physics that shall include careful measurements and simple calculations based on numerical data.

The data of physics, like most of the data of daily human experience, are at best imperfect and uncertain; and herein lies the peculiar value of the subject for training in practical thinking as contrasted with rigorous logical reasoning from ideal data. Indeed it is something of an advantage to the high-school student to have rather simple apparatus, even if it lacks extreme accuracy, provided that he learns from the first to recognize the limitations of his instruments and of his methods; so that he may not believe that the division or multiplication of one roughly accurate number by another will yield a result that is trustworthy to an indefinite number of decimal figures. Just at this point I want to say a word in defense of the much-

sneered-at "percentage of error." If a student is to make any simple determination, as, for example, the volume of a rectangular solid, and his foot rule is not trustworthy beyond the sixteenth of an inch, he should find out whether the volume that he obtains is trustworthy to within a cubic inch or the tenth part of a cubic inch. Finding out the limit of trustworthiness or the probable percentage of error will cost only the repetition of his calculation with an assumed increase or decrease in all his measurements such as might easily have crept in as an error without detection. The art and habit of testing evidence are well worth so trifling a cost of time and effort, and may stand the student in good stead when he is asked to accept the reported value of property, the truth of a political or economic theory, or the advantage and rightness of a course of action.

A crude and simple piece of apparatus with an intelligent observer, alert to its limitations, is better than the most refined apparatus in the hands of a student who blindly accepts the indications of the apparatus because it is refined. About a dozen years ago the president of Harvard University had as a guest at his summer home in Maine a young man who had recently graduated from the University and was beginning to teach the freshman course in physics. The president wished to ascertain the number of cart-loads of earth that would be required to grade a tennis court on his grounds, and with the help of the young instructor, he set about making a survey with such instruments as could be found about the place. The best outfit that could be assembled consisted of a carpenter's level, a two-foot rule, a string, and the president's walking-stick. With these instruments the survey was successfully completed, and the president was delighted with the close agreement between his estimate and the number of loads of earth that were actually used to grade the court. In relating this incident, the young instructor, now dean of the Lawrence Scientific School, dwelt upon the peculiar pleasure that he and the president derived from doing a good piece of surveying with such ordinary instruments. Thus any student of physics may derive from the use of simple apparatus a joy of achievement and a grasp of the principles involved in his experiment that he

might never obtain from a mechanical handling of the finest instruments of precision. I believe in good apparatus, the best that the student can use without having his thought distracted from the main purpose of his experiment by the complexity of his instruments and the refinement of his method; but whenever the complexity of an instrument or the refinement of a method stands between the young student and his ready grasp of the purpose and significance of an experiment, a simpler apparatus and a simpler method must be used.

Thus far we have considered the general treatment of physics to which have been ascribed the alleged inefficiency and unpopularity of the subject; but two other important factors, the syllabus and the examination, demand our attention as well. There are three syllabuses in physics more or less prominently before the teachers of the country at this time—namely, the syllabus of the College Entrance Examination Board, the syllabus of the New York State Education Department, and the syllabus of the National Educational Association. Before discussing any of these, it may be well to consider, and, if possible, to agree upon some characteristics of a good syllabus. I beg leave, therefore, to propose for your consideration the following characteristics of a good syllabus:

(1) It must be comprehensive enough adequately to cover the whole subject-matter to be considered.

(2) It must exclude irrelevant and obsolete matter and matter not adapted to the course.

(3) It must be clear and complete in statement without the introduction of unnecessary details.

(4) It must be concise enough to give definite direction and a degree of uniformity to the work of those who use it.

(5) It must be elastic enough to permit considerable individual choice of methods and matter.

To summarize these statements in a single sentence, a good syllabus must be comprehensive, exclusive, clear, concise, and elastic.

The syllabus of the College Entrance Examination Board is a modification of the original forty experiments proposed by Harvard University in 1887. Additions have been made to

the original list, so that it now contains sixty-one experiments. The syllabus, if it may properly be called a syllabus at all, is not comprehensive, since it merely suggests a body of laboratory work which at most will not occupy more than two-fifths of a student's time for a year. Three-fifths of the whole course is left to the chance selection of the instructor, since no topical syllabus is provided. The syllabus is not exclusive of matter not suited to the course. Experiments 26 to 31, inclusive, and experiment 36, relating to breaking stress and elasticity and to acceleration tests for masses are unsatisfactory and seldom attempted by teachers of physics in recent years. The statements of the syllabus are clear enough for the purposes of a trained physicist, but are of little help to the teacher in the small school with many subjects to prepare and teach. The syllabus offers nearly twice as many experiments as are required by the course, with no indication of preferred or required experiments. It is, therefore, not concise enough to be helpfully directive. The elasticity of the syllabus is excessive, since whole divisions of the subject-matter may be omitted at the pleasure of the teacher, while he still complies with the minimum requirement of thirty-five experiments. Judged by all our provisional tests of fitness, the syllabus of the College Entrance Examination Board must be found wanting.

The syllabus of the New York State Department represents an effort to adapt the best features of the syllabuses that had preceded it to the requirements of a state department of education. This syllabus consists of two distinct parts, viz., a list of laboratory experiments, fifty-four in number, and a topical syllabus containing eleven main divisions, each of which is subdivided to define the exact subject-matter for which a student is to be held responsible. In many instances the subdivisions are still further divided for the sake of a more complete definition of the work to be done. From the topical and the laboratory syllabuses obsolete and unsuitable matter has been excluded, and only such topics and exercises have been retained as were approved by a large number of teachers. At the risk of offending the taste of expert teachers who require no assistance, brief directions for performing each experiment

have been given, together with suggestive questions to be answered from the results of the experiment. The syllabus plainly states, however, that the directions are to be regarded as suggestive rather than mandatory. The laboratory syllabus consists of fifty-four experiments, more than one-third of which deal with phenomena not requiring measurements. That is to say, more than one-third of the laboratory experiments are purely qualitative. Twenty-five of the experiments have been regarded as so fundamental that they have been marked as required for all students, and of these twenty-five required experiments considerably more than one-third (exactly 36 per cent.) are qualitative. The remaining ten experiments for the course may be selected by the teacher according to local interests or conditions. Even the twenty-five required experiments may be modified or others substituted for them, provided that the substituted experiments are not widely different from those found in the list. From the above statements it appears that the State syllabus is comprehensive, exclusive of irelevant and obsolete matter, reasonably clear, concise, and elastic. Its final test, however, must be found in the using; and it is to be expected and desired that it will steadily be improved and modified to meet the ever-changing needs of the schools.

The syllabus adopted by the National Educational Association at its session in 1905 differs from the older syllabus approved by that body in the introduction of a considerable number of new experiments, making a total list of eighty-one. It is open to all the objections already stated in reference to the syllabus of the College Entrance Examination Board. It has no topical syllabus; it still contains every obsolete and unsuitable experiment that ever drifted into it; and the list of experiments is so large that it wholly lacks directive or unifying power.

Equally important with the syllabuses in physics are the examinations which in a large measure serve to interpret them. Doubtless most educators will agree that the chief function of a modern examination is directive, and that its function as a test of proficiency is secondary and incidental. Now if the teaching of physics has run to the juggling of mathematical

puzzles and percentages of error, as we have been told, the cause must be sought in the examinations that have been set as well as in the syllabuses. To discover, if possible, the influence of various examinations, I have made a careful study of the latest examinations set by Columbia, Harvard, Princeton, Yale, and the College Entrance Examination Board. I have also made brief but complete calculations of all the numerical problems set, in the hope of finding out the pernicious influences that have been responsible for introducing so much and so difficult mathematics into the teaching of physics. You will remember that the speaker at the earlier discussion of this subject quoted a college professor who would accept the present treatment of secondary physics as algebra or as geometry, but never as physics. The following groups of problems have been taken from the latest regular papers obtainable and have been aranged in the order of the emphasis placed upon mathematical calculations. Numbers in parentheses are the numbers of the questions as they appeared in the several papers:

SHEFFIELD SCIENTIFIC SCHOOL
YALE UNIVERSITY
June, 1906

(1) A constant force acting on a mass of 10 gms. for 5 sec. produces a velocity of 100 cm. per sec. What velocity would this force produce in 10 sec. when acting on a mass of 50 gm.?

Solution: $\dfrac{100 \times 10 \times 10}{5 \times 50} = 40$ cm. per second—*Ans.*

(2) If a horse walk at the rate of 2.5 miles an hour, at the same time raising a weight of 150 pounds through a vertical distance equal to the distance traveled, how much work does he do per minute?

$\dfrac{2.5 \times 5280 \times 150}{60} = 33000$ foot pounds per minute—*Ans.*

In this paper seven questions were given, and all were required. The other five questions were descriptive.

COLLEGE ENTRANCE EXAMINATION BOARD
June, 1906

(3) If the specific gravity of a body be 2.0, how much will a cubic centimeter of it weigh in water? What volume of it will weigh 50 grams in water?

$2 - 1 = 1$ gram.—*Ans.* (a)

$1)50$

50 cc.—*Ans.* (b)

(4) A ball is rolling up a smooth incline at the rate of 15 cm. per second, and loses velocity at the rate of 3 cm. per second. How far up the incline will it move before coming to rest?

3)15
5 seconds.

15 cm., initial velocity per second
0 final velocity per second

2)15
7.5 cm., average velocity per second
5
37.5 cm., total distance up the plane.—*Ans.*

(9) A candle flame is 150 cm. from a screen which receives an image four times as wide as the flame itself. If a double convex lens is used to project the image, at what distance from the candle must the lens be placed and what is its focal length?

5)150
30
4
120 cm. from lens to candle

$$\frac{1}{120}+\frac{1}{30}=\frac{1}{F}$$

$$5F = 120$$

$F = 24$ cm., focal length.—*Ans.*

Twelve questions in all, seven answers required $(2+2+2+1)$ from four groups of three questions each.

HARVARD UNIVERSITY

June, 1906

(1) A body having a volume of 150 cu. cm. and a density of 1.1 grams per cu. cm. is placed in water with 50 cu. cm. of wood, of density 0.6 beneath it. How many cu. cm. of the body will remain above the surface of the water?

150 × 1.1 = 165 gm., total weight
50 × 0.4 = 20 gm., upheld by wood
145 gm., residue of weight
150 cc., total volume
145 cc., water to lift residue of weight
5 cc., volume not submerged.—*Ans.*

(3) A uniform beam, 20 feet long and weighing 100 pounds, rests in a horizontal position on a fulcrum 4 feet from one end, and just at this end presses against the under side of a second beam:

(a) How great is the upward pressure exerted on the second beam?

(b) How great is the downward pressure exerted on the fulcrum?

$$\frac{6\times 100}{4} = 150 \text{ lbs.}$$—*Ans.* (a)

150 lbs.
100 lbs.
250 lbs.—*Ans.* (b)

(6) Water would have to fall about 1400 feet in order to be heated 1° C. by the work done upon it by the earth's attraction during the fall. If the specific heat of mercury is 0.032, how many foot pounds of work would be required to increase the temperature of 5 lbs. of mercury 1° C.?

$1400 \times 5 = 7000$ ft. lbs. to heat 5 lbs. water 1° C.

$0.032 \times 7000 = 224$ ft. lbs. to heat 5 lbs. mercury 1° C.—*Ans.*

(10) (a) If an arc lamp requires a current of 10 amperes and a difference of potential at its terminals of 50 volts, how great is its resistance?

(b) How many watts does it require?

(c) What part of a horse-power does it use?

$C = \frac{E}{R}$, short expression for Ohm's law

$10 = \frac{50}{R}$ by substitution

$R = 5$ ohms.—*Ans.* (a)

$10 \times 50 = 500$ watts.—*Ans.* (b)

$\frac{500 \text{ watts required}}{746 \text{ watts per H. P.}} =$ approximately ⅔ horsepower.—*Ans.* (c)

Ten questions in all, any four to be omitted.

PRINCETON UNIVERSITY

June, 1906

(1) A gun whose mass is 120 tons fires a ball whose mass is 800 lbs. with a velocity of 2000 feet per second. What is the velocity of recoil of the gun?

$240000\ X = 800 \times 2000$

$X = 6.66+$ feet per second.—*Ans.* (a)

$\frac{1000}{10 \times 5} = 20$ cm. per second.—*Ans.* (b)

(2) The pressure in a mass of gas is 20 lbs. per sq. in. How will the volume be affected if the pressure is raised to 90 lbs. per sq. in.?

$\frac{1 \times 20}{90} = \frac{2}{9}$ of original volume.—*Ans.*

(4) 300 cu. cm. of a gas are under a pressure of 760 mm. of mercury when at 27° c. What will the pressure become if the volume is kept constant, but the temperature is raised to 327° c.? The temperature pressure coefficient is .00336.

$.00336 = 1\text{-}273$

$\frac{760 \times 600}{300} = 1520$ mm. of mercury.—*Ans.*

(5) 30 grams of water at 80° C. are poured into 80 grams of water at 30° C. What is the resulting temperature?

Let $X =$ number degrees resulting temperature

Then $30\ (80 - X) = 80\ (X - 30)$

$240 - 3\ X = 8\ X - 240$

$11\ X = 480$

$X = 43.6°$ resulting temperature.—*Ans.*

(6) The electrochemical equivalent of silver is .001118. How much silver will be deposited in one day by a current of 10 amperes?

$$.001118 \times 10 \times 60 \times 60 \times 24 = 965.95 \text{ grams.—}\textit{Ans.}$$

$$\begin{array}{r} .001118 \\ 864000 \\ \hline 4472000 \\ 6708 \\ 8944 \\ \hline 965.952000 \text{ grams.—}\textit{Ans.} \end{array}$$

Six questions in all, any five to be answered. Each question, except the first, contained also a descriptive question. An alternative paper, wholly descriptive and theoretical, was given for those who did not offer note-books.

COLUMBIA UNIVERSITY

September, 1906

(1) A mass of 1 kg. moves from rest with a uniformly accelerated motion, and passes over 500 cm. during the first five seconds. Find the value of the acceleration. Find the value of the force in dynes which would produce this acceleration.

Let X = No. cm. acceleration per second
Then 5 X = No. cm. final velocity

$$\begin{array}{r} 5\,X \text{ final velocity} \\ 0 \text{ initial velocity} \\ \hline 2)\,5\,X \\ \hline 2.5\,X \text{ average velocity} \end{array}$$

$5 \times 2.5\,X = 500$ cm., total space covered
$X = 200$ cm., acceleration per second.—*Ans.* (a)
$1000 \times 200 = 200000$ dynes, force required.—*Ans.* (b)

(2) If a force of 1000 dynes acts on a mass of 10 kg. free to move, how many ergs of work will the force do during the first second? How many during the fifth second of motion?

$\frac{1000}{10000} = \frac{1}{10}$ cm., acceleration per second

$\frac{1}{10} \times \frac{1}{2} = \frac{1}{20}$ cm., distance moved during first second

$\frac{1}{20} \times 1000 = 50$ ergs, work done first second.—*Ans.* (a)

$\frac{0.4 + 0.5}{2} = \frac{0.9}{2}$ or $\frac{9}{20}$ cm., space covered in fifth second

$\frac{9}{20} \times 1000 = 450$ ergs, work done in fifth second.—*Ans.* (b)

(3) A uniform bar 100 cm. long weighs 10 kg. A weight of 1 kg. is placed on the bar 10 cm. from one end, and a weight of 5 kg. 20 cm. from the other end. At what point must the bar be supported in order that there may be equilibrium?

Let axis of rotation pass through left end of bar
Let X = No. cm. from left end to supporting fulcrum
Then by law of moments:

$10 \times 1 = 10$
$5 \times 80 = 400$
$10 \times 50 = 500$
$-16X = -16X$

$916 - 16X = 0$
$16X = 910$
$X = 56.9$ cm., distance from fulcrum to left end of bar.—*Ans.*

(4) A body weighs 10 g. in air, and 8 g. when immersed in water. Find its specific gravity. This body is attached to a second body which weighs 20 g. in air, and the two together, when immersed in water, weigh one gram. Find the specific gravity of the second body.

10
8
2)10
5 specific gravity.—*Ans.* (a)

8 g. lost by sinker
19 g. lost by light body
27 g. total loss
27)20.00(.74, specific gravity.—Ans. (b)
189
110
108

(5) The density of hydrogen at 0° C. and 1 atmosphere pressure is .000088 gm. per cu. cm. How many grams of hydrogen could be put into a cylinder 20 cm. in diameter and 150 cm. long, under a pressure of 6 atmospheres and at a temperature of 0° C.?

$3.1416 \times 100 = 314.16$ sq. cm. area of base
314.16
150
1570800
31416
47124.00
6
282744
.000088
24.881472 grams.—*Ans.*

(6) If the velocity of sound in air is 330 meters per second, what would be the frequency of the fundamental note emitted by a closed organ pipe 200 cm. long? What would be the frequency of the fundamental note of an open pipe of the same length?

$$\frac{330 \times 100}{200 \times 4} = 41.25 \text{ vibrations per second.—}\textit{Ans.}\text{ (a)}$$

$41.25 \times 2 = 82.50$ vibrations per second.—*Ans.* (b)

(7) A piece of metal weighing 10 g. was heated to a temperature of 100° C., and was then placed in a calorimeter containing 50 g. of water at a temperature of 20° C. The final temperature of the water and metal was 24° C. Find the specific heat of the metal.

Let X = No. calories required to raise 1 g. of metal 1° C.

Then $10\,X\,(100 - 24) = 50 \times 4$

$760\,X = 200$

$X = .26$.—*Ans.*

760) 200.00 (.26 +
152.0
4800
4560

(8) The coefficient of cubical expansion of a gas is 1-273 on the centigrade scale. A mass of gas occupies a volume of one cubic meter at a pressure of one atmosphere and a temperature of 15° C. What would be its volume at a temperature of 35° C. and the same pressure?

$$\frac{1 \times 308}{288} = 1.07 \text{ cu. m.—}\textit{Ans.}$$

288) 308 (1.07 —
288
2000
2016

(10) Three similar voltaic cells, each having an electromotive force 1.4 volts and an internal resistance of 2 ohms, when connected in series with a certain external resistance, give a current of half an ampere. What is the value of the external resistance? What current would the three cells give through the same external resistance if they were connected in parallel?

$$C = \frac{E}{R + r}$$

$$0.5 = \frac{4.2}{R + 6}$$

$0.5\,R + 3 = 4.2$

$0.5\,R = 1.2$

$R = 2.4$ ohms.—*Ans.* (a)

$$C = \frac{1.4}{\frac{2.4 + 2}{3}} = \frac{4.2}{7.2 + 2} = \frac{4.2}{9.2} = .46 - \text{ amperes.—}\textit{Ans.}\text{ (b)}$$

9.2) 4.20 (.46 —
3 68
580
552

Twelve questions in all, any ten to be answered.

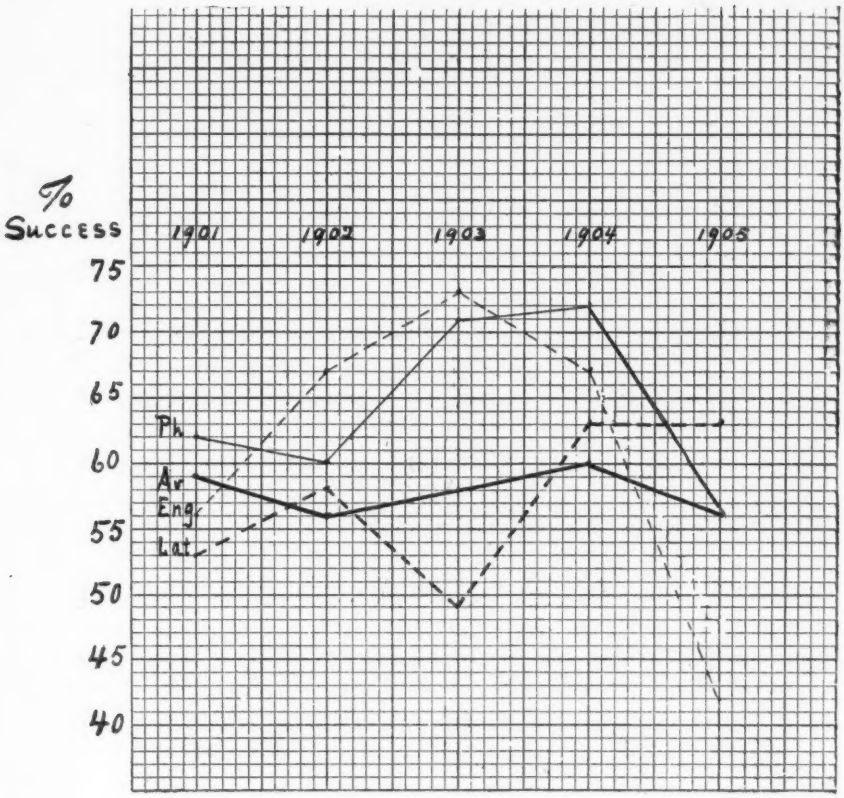
COMPARISON OF PAPERS SET BY COLLEGES AND BY THE C. E. E. B.

	Mathematical	Descriptive	Total	Required	Optional	Total
Columbia	9	3	12	0	9	9
Harvard	4	6	10	0	6	6
Princeton	5	1	6	0	5	5
Yale	2	5	7	7	0	7
C. E. E. B.	3	9	12	7	*	7

*Twelve questions were divided into groups of three questions each. Two questions were required from each of the first three groups and one question from the fourth group.

The foregoing problems and tabulation seem to show that from a mathematical point of view the easiest examination set was that of Yale, while the most difficult examination came from Columbia. From the frequent addresses and writings and well-known practise of the distinguished teacher who discust the subject of physics at an earlier meeting, we should have expected that an examination leaning strongly toward the non-mathematical and humanizing interests of the subject would have come from his immediate sphere of influence; and it is exceedingly disappointing to me at least to find that the paper from his college is the most stiffly mathematical and the most difficult examination in physics that I have seen in fifteen years.

From the tabulation it should be noted that while the paper of the College Entrance Examination Board gives the largest number of options in the selection of questions, by its system of grouping questions, it compels the most complete study of the entire subject. A candidate might have past the Harvard examination with maximum credit, even if he had never studied mechanics at all. Another candidate might have past equally well who had wholly omitted the study of sound together with light or heat or electricity. An examination of the papers from the other colleges that permit some choice of questions will show that a like opportunity is presented for the candidate to omit important divisions of his subject for the sake of making special preparation in the others. Is it wise to continue this opportunity, or should the general adoption of the group system compel a more comprehensive study of the subject?



The accompanying diagram will serve to show what degree of success has been achieved by candidates who have taken the examinations of the College Entrance Examination Board in English, Latin, and physics during the past five years. It will also indicate the relative severity of these examinations from year to year. The heavy black line represents the average percentage of success in all subjects offered by the Board. The very sudden and remarkable drop in English for 1905 coincides with a complete change in the composition of the committee that set the paper in this subject, and represents a tragedy in the educational history of twenty-five per cent. of all the candidates who took the examination in English that year. With a paper similar to those set in any of the three preceding years, it is quite probable that most of the twenty-five per cent. would have past the examination successfully. The light con-

tinuous line shows that the examination in physics has always been of medium difficulty.

It is unfortunate that the speaker, who stated that the number of students taking the study of physics had fallen from twenty-five to twelve per cent. in twelve years, did not give the source of his information. The records of the College Entrance Examination Board for the last five years throw some light on the growth or decline of physics as a high school subject. The following tabulations show how the number of candidates in physics have compared with the number of candidates in the most popular subjects of all, namely, English reading and Latin grammar:

	English Reading	Physics	Per Cent. Physics
1901	319	76	24
1902	800	222	27.8
1903	996	273	27.4
1904	1033	351	34
1905	1244	449	36

The number of candidates in English has increased fourfold, while the number in physics has increased sixfold. Physics has gained fifty per cent. over its most popular competitor:

	Latin Grammar	Physics	Per Cent. Physics
1901	218	76	35
1902	540	222	41
1903	693	273	39
1904	769	351	45.6
1905	868	449	51.7

The gain of physics over Latin is almost precisely the same as the gain over English, and this in spite of the fact that English and Latin are subjects required for admission to college, while physics, if required at all, is usually classed with several alternatives such as chemistry or biology. These figures do not represent the choice of physics thru caprice or under compulsion; nor do they stand for short and shallow courses. They represent the choice of serious students pre-

paring for college and technical or professional schools. If it is true that the percentage of students in physics is only half as great now as it was twelve years ago, it would seem that the percentage must have fallen extremely low about five years ago, and that its rebound and recovery during these five years have been tremendous. During this time a syllabus has been developed that is comprehensive, exclusive of irrelevant and obsolete matter, clear in statement, concise enough to be directive, and elastic enough to allow reasonable freedom and individuality. Examinations have been prepared that, for the most part, are comprehensive, that compel attention to the whole subject, and that are of moderate difficulty and not too strongly mathematical. The most reliable and recent statistics available seem to indicate that the study of physics, far from being on the wane, is the most vigorously growing subject in the high school curriculum.

Modern physics is a veritable infant among the subjects of the high school course. Shall we then regard the present agitation over the teaching of physics as indicating cause for alarm; or shall we regard it somewhat as the behavior of a lusty infant that without any outward irritation or real inward disturbance shuts up its fists and its eyes occasionally and kicks and howls itself black in the face with no other provocation than normal growing pains? I am inclined to take the more optimistic view and to believe that while the obvious discontent and unrest are hopeful signs of growth, there is no real cause for anxiety, and that the progress of the last decade should give us great encouragement.

FRANK ROLLINS

STUYVESANT HIGH SCHOOL
NEW YORK

IV

SELECTIVE EDUCATION[1]

Since Darwin called attention to the rôle of what he named "natural selection" in the genesis and preservation of species, and since his successors, both followers and opponents, have added to this many other kinds of selection that are continually operative, it has become increasingly evident that from one standpoint we may look on the sum of natural processes, organic and inorganic, as a vast selective system, as the result of which things are as they are, whether the results are the positions of celestial bodies or the relative places of human beings in the intellectual or social scale. The exact constitution of the present population of New York is the result of a great number of selective acts, some regular, others more or less haphazard. Selection is no less selection because it occurs by what we call chance—for chance is only our name for the totality of trivial and unconsidered causes. When, however, we count man and man's efforts in the sum of natural objects and forces, we have to reckon with his intelligence in these selective processes. I desire to call attention to the place that they play in educative systems and in particular to the way in which they may be furthered or made more effective by books, especially by public collections of books.

When we think of any kind of training as it affects the individual, we most naturally regard it as changing that individual, as making him more fit, either for life in general or for some special form of life's activities. But when we think of it as affecting a whole community or a whole nation, we may regard it as essentially a selective process. In a given community it is not only desirable that a certain number of men should be trained to do a specified kind of work, but it is even more

[1] An address delivered before The Schoolmen of New York, April 27, 1907.

desirable that these should be the men that are best fitted to do this work. When Mr. Luther Burbank brings into play the selection by means of which he achieves his remarkable results in plant breeding he gets rid of the unfit by destruction, and as all are unfit for the moment that do not advance the special end that he has in view, he burns up plants—new and interesting varieties perhaps—by the hundred thousand. We can not destroy the unfit, nor do we desire to do so, for from the educational point of view unfitness is merely bad adjustment. There is a place for every man in the world and it is the educator's business to see that he reaches it, if not by formative, then by selective processes. This selection is badly made in our present state of civilization. It depends to a large extent upon circumstances remote from the training itself—upon caprice, either that of the person to be trained or of his parents, upon accidents of birth or situation, upon a thousand irrelevant things; but in every case there are elements present in the training itself that aid in determining it. A young man begins to study medicine, and he finds that his physical repulsion for work in the dissecting-room can not be overcome. He abandons the study and by doing so eliminates an unfit person. A boy who has no head for figures enters a business college. He can not get his diploma, and the community is spared one bad bookkeeper. Certainly in some instances, possibly in all, technical and professional schools that are noted for the excellence of their product are superior not so much because they have better methods of training, but because their material is of better quality, owing to selection exercised either purposely, or automatically, or perhaps by some chance. The same is true of colleges. Of two institutions with the same curriculum and equally able instructors, the one with the widest reputation will turn out the best graduates because it attracts abler men from a wider field. This is true even in such a department as athletics. To him that hath shall be given. This is purely an automatic selective effect.

It would appear desirable to dwell more upon selective features in educational training, to ascertain what they are in each case and how they work, and to control and dispose them

with more systematic care. Different minds will always attach different degrees of importance to natural and acquired fitness, but probably all will agree that training bestowed upon the absolutely unfit is worse than useless, and that there are persons whose natural aptitudes are so great that upon them a minimum of training will produce a maximum effect. Such selective features as our present educational processes possess, the examination, for instance, are mostly exclusive; they aim to bar out the unfit rather than to attract the fit. Here is a feature on which some attention may well be fixt.

How do these considerations affect the subject of general education? Are we to affirm that arithmetic is only for the born mathematician and Latin for the born linguist, and endeavor to ascertain who these may be? Not so; for here we are training not experts but citizens. Discrimination here must be not in the quality but in the quantity of training. We may divide the members of any community into classes according as their formal education—their school and college training—has lasted one, two, three, four, or more years. There has been a selection here, but it has operated, in general, even more imperfectly than in the case of special training. Persons who are mentally qualified to continue their schooling to the end of a college course, and who by so doing would become more useful members of the community, are obliged to be content with two or three years in the lower grades, while others, who are unfitted for the university, are kept at it until they take, or fail to take, the bachelor's degree. An ideal state of things, of course, would be to give each person the amount of general education for which he is fitted and then stop. This would be difficult of realization even if financial considerations did not so often interfere. But at least we may keep in view the desirability of preventing too many misfits and of insisting, so far as possible, on any selective features that we may discover in present systems.

For instance, a powerful selective feature is the attractiveness of a given course of study to those who are desired to pursue it. If we can find a way, for example, to make our high school courses attractive to those who are qualified to take

them, while at the same time rendering them very distasteful to those who are not so qualified, we shall evidently have taken a step in the right direction. It is clear that both parts of this prescription must be taken together or there is no true selection. Much has been done of late years toward making educational courses of all kinds interesting and attractive, but it is to be feared that their attractiveness has been such as to appeal to the unfit as well as to the fit. If we sugar-coat our pills indiscriminately and mix them with candy, many will partake who need another kind of medicine altogether. We must so arrange things that the fit will like while the unfit dislike, and for this purpose the less sugar-coating the better. This is no easy problem and it is intended merely to indicate it here, not to propose a general solution.

The one thing to which attention should be directed is the rôle that may be and is played by the printed book in selective education. There is more or less effort to discredit books as educative tools and to lay emphasis on oral instruction and manual training. We need not decry these, but, it must be remembered that after all the book contains the records of man's progress; we may tell how to do a thing, and show how to do it, but we shall never do it in a better way or explain the why and wherefore, and surely transmit that ability and that explanation to posterity, without the aid of a stable record of some kind. If we were sure that our students could and would pick out only what they needed, as a wild animal picks his food in the woods, we might go far toward solving our problem, by simply turning them loose in a collection of books. Some people have minds that qualify them to profit by such "browsing," and some of these have practically educated themselves in a library. Even in the more common cases where formal training is absolutely necessary, access to other books than text-books is an aid to selection both qualitative and quantitative. Books may serve as samples. To take an extreme case, a boy who had no knowledge whatever of the nature of law or medicine would certainly not be competent to choose between them in selecting a profession, and a month spent in a library where there were books on both subjects would cer-

tainly operate to lessen his incompetence. Probably it would not be rash to assert that with free access to books, under proper guidance, both before and during a course of training, the persons who begin that course will include more of the fit and those who finish it will include less of the unfit, than without such access.

Let us consider one or two concrete examples. A college boy has the choice of several different courses. He knows little of them, but thinks that one will meet his needs. He elects it and finds too late that he is wasting his time. Another boy, whose general reading has been sufficient to give him some superficial knowledge of the subject-matter in all the courses, sees clearly which will benefit him, and profits by that knowledge.

Again, a boy, full of the possibilities that would lead him to appreciate the best in literature, has gained his knowledge of it from a teacher who looks upon a literary masterpiece only as something to be dissected. The student has been disgusted instead of inspired, and his whole life has been deprived of one of the purest and most uplifting of all influences. Had he been brought up in a library where he could make literary friends and develop literary enthusiasms, his course with the dryasdust teacher would have been only an unpleasant incident, instead of the wrecking of a part of his intellectual life.

Still again, a boy on a farm has vague aspirations. He knows that he wants a broader horizon, to get away from his cramped environment—that is about all. How many boys, impelled by such feelings, have gone out into the world with no clear idea of what they are fitted to do, or even what they really desire! To how many others has the companionship of a few books meant the opening of a peep-hole, thru which, dimly perhaps, but none the less really, have been descried definite possibilities, needs, and opportunities!

To all of these youths books have been selective aids merely —they have added little or nothing to the actual training whose extent and character they have served to point out. Such cases, which it would be easy to multiply, illustrate the value of books in the selective functions of training. To as-

sert that they exercise such a function is only another way of saying that a mind orients itself by the widest contact with other minds. There are other ways of assuring this contact, and these should not be neglected; but only thru books can it approach universality both in space and in time. How else could we know exactly what Homer and St. Augustine and Descartes thought and what Tolstoi and Lord Kelvin and William James, we will say, are even now thinking?

It has scarcely been necessary to say all this to convince you of the value of books as aids to education; but it is certainly interesting to find that in an examination of the selective processes in education, we meet with our old friends in such an important rôle.

A general collection of books, then, constitutes an important factor in the selective part of an education. Where shall we place this collection? I venture to say that altho every school must have a library to aid in the formative part of its training, the library as a selective aid should be large and central and should preferably be at the disposal of the student not only during the period of his formal training, but before and after it. This points to the public library, and to close coöperation between it and the school, rather than to the expansion of the classroom library. This is, perhaps, not the place to dispute the wisdom of our Board of Education in developing classroom libraries, but it may be proper to put in a plea for confining them to books that bear more particularly on the subjects of instruction. The general collection of books should be outside of the school, because the boy is destined to spend most of his life outside of the school. His education by no means ends with his graduation. The agents that operate to develop and change him will be at work so long as he lives, and it is desirable that the book should be one of these. If he says good-by to the book when he leaves school, that part of his training is likely to be at an end. If he uses, in connection with, and parallel to, his formal education a general collection of books outside of the school, he will continue to use it after he leaves school. And even so far as the special classroom library is concerned, it must be evident that a large gen-

eral collection of books that may be drawn upon freely is a useful supplement. For the teacher's professional use, the larger the collection at his disposal the better. A sum of money spent by the city in improving and making adequate the pedagogical section of its public library, particularly in the department of circulation, will be expended to greater advantage than many times the amount devoted to a large number of small collections on the same subjects in schools.

These are the considerations that have governed the New York Public Library in its effort to be of assistance to the teachers and pupils in the public schools of the city. Stated formally, these efforts manifest themselves in the following directions:

(1) The making of library use continuous from the earliest possible age, thru school life and afterwards;

(2) Coöperation with the teacher in guiding and limiting the child's reading during the school period;

(3) Aid within the library in the preparation of school work;

(4) The supplementing of classroom libraries by the loan of books in quantity;

(5) The cultivation of personal relations between library assistants and teachers in their immediate neighborhood;

(6) The furnishing of accurate and up-to-date information to schools regarding the library's resources and its willingness to place them at the school's disposal;

(7) The increase of the library's circulation collection along lines suggested and desired by teachers;

(8) The granting of special privileges to teachers and special students who use the library for purposes of study.

Toward the realization of these aims three departments are now coöperating, each of them in charge of an expert in his or her special line of work.

(1) The children's rooms in the various libraries, now under the direction of an expert supervisor.

(2) The traveling library office.

(3) The division of school work, with an assistant in each branch, under skilled headquarters superintendence.

When our plans, which are already in good working order, are completely carried out, we shall be able to guarantee to every child guidance in his reading up to and thru his school course, with direction in a line of influence that will make him a user of books thruout his life and create in him a feeling of attachment to the public library as the home and dispenser of books, and as a permanent intellectual refuge from care, trouble, and material things in general, as well as a mine of information on all subjects that may benefit or interest him.

Some of the obstacles to the immediate realization of our plans in full may be briefly stated as follows:

(1) Lack of sufficient funds. With more money we could buy more books, pay higher salaries, and employ more persons. The assistants in charge of children's rooms should be women of the highest culture and ability, and it is difficult to secure proper persons at our present salaries. Assistants in charge of school work must be persons of tact and quickness of perception, and they should have no other work to do; whereas at present we are obliged to give this work to library assistants in addition to their ordinary routine duties, to avoid increasing our staff by about forty assistants, which our appropriation does not permit.

(2) Misunderstanding on the part of the public, and also to some extent on the part of teachers, of our aims, ability, and attitude. This I am glad to say is continually lessening. We can scarcely expect that each of our five hundred assistants should be thoroly imbued with the spirit of helpfulness toward the schools or even that they should perfectly understand what we desire and aim to do. Nor can we expect that our wish to aid should be appreciated by every one of fifty thousand teachers or a million parents. This will come in time.

(3) A low standard of honesty on the part of certain users of the library. It is somewhat disheartening to those who are laboring to do a public service to find that some of those whom they are striving to benefit, look upon them merely as easy game. To prevent this and at the same time to withstand those who urge that such misuse of the libraries should be met by the withdrawal of present privileges and facilities uses up

energy that might otherwise be directed toward the improvement of our service. Now, like the intoxicated man, we sometimes refuse invitations to advance because it is "all we can do to stay where we are." Here is an opportunity for all the selective influences that we may bring to bear, and unfortunately the library can have but little part in these.

Have I wandered too far from my theme? The good that a public library may do, the influence that it may exert, and the position that it may assume in a community, depend very largely on the ability and tact with which it is administered and the resources at its disposal. Its public services may be various, but probably there is no place in which it may be of more value than side by side with the public school; and I venture to think that this is the case largely because education to be complete must select as well as train, must compel the fit to step forward and the unfit to retire, and must do this, not only at the outset of a course of training but continuously thruout its duration. We speak of a student being "put thru the mill," and we must not forget that a mill not only grinds and stamps into shape but also sifts and selects. A finished product of a given grade is always such not only by virtue of formation and adaptation but also by virtue of selection. In human training one of the most potent of these selective agencies is the individual will, and to train that will and make it effective in the right direction there is nothing better than constant association with the records of past aims and past achievements. This must be my excuse for saying so much of libraries in general, and of one library in particular, in an address on what I have ventured to give the name of Selective Education.

ARTHUR ELMORE BOSTWICK

NEW YORK PUBLIC LIBRARY

V

A PUBLIC SCHOOL LIBRARY SYSTEM

One of the most successful innovations in school organization and administration has been the introduction of school libraries into the public elementary and higher schools. A complete system provides for a small reference library for teachers and class libraries for each class; a general reference library for high school instructors and students and class libraries for the several classes; a course of instruction in library administration and economy for students of higher schools; and a central pedagogical library for the advancement of the teacher's professional interests and intellectual attainments.

The object of the public school library is first to aid the teacher in the work of educating the pupil and to furnish her with the materials for her own improvement; and second to create, on the part of the pupil, a friendship for books and a skill in using them. The result obtained in other cities from well organized public school libraries has been an increased ability on the part of teachers and pupils to locate, in the least possible time, important facts relative to their work in the classroom. The ultimate aims of the school library are to cultivate the power of individual study; to stimulate a love for reading; to acquaint the child with the world at large; to mold his character and form high ideals of life; to bring about a closer relation between the home and the school; and to prepare the child to use the free public library in an intelligent manner.

To be of the greatest value, the teacher's library in the public school should be limited in size and strictly pedagogical; a non-circulating library and open for reference and use during the entire school day. It should contain one or two standard

dictionaries of the English language such as *Webster's unabridged dictionary* and the *Century dictionary;* a representative encyclopedia, as the *International encyclopedia;* an atlas, preferably the Century, and a few of the more important cyclopedias of special subjects. Besides these purely reference books there should be the leading books on the history of education, on the theory of teaching, and on the special methods of presenting the several branches of study included in the public school curriculum. The library should be located in a well lighted part of the school building, away from the noise of the street or other disturbances; the furnishings should provide for the comfort and convenience of the teacher-student, and the library should be under the direction of the principal of the school or one of his assistants.

The teachers' library in the public school is a necessity. It is just as imperative for the teacher to have a library at his command, as it is for the carpenter to have a workshop or the chemist a laboratory. This is manifest because, first, existing courses of instruction are not confined to the text-book but presuppose a broader preparation of the subject taught; and second, the credits granted to teachers of the public schools who have devoted time and energy to extended study have created a desire on their part to acquaint themselves better with the literature of their profession. It seems therefore timely and proper for boards of education to encourage, as they are doing, the establishment of a library in every public school to aid the teacher in the preparation of class work and to furnish material for intellectual and professional development; for besides the teacher's personal gain, the cultivation of noble thoughts and high ideals on the part of the teacher exerts a powerful influence on the child mind which unconsciously lightens the burden of the teacher and makes for his professional success.

The system of free public education in America begins with the public school and continues in the free public library. The aim of the public school is to give the child a broad and general knowledge of his environment in order to prepare him for life's work and to better enable him to become his own teacher.

The purpose of the free public library is to supplement this knowledge and furnish the adult with a record of the action and thought of the entire human race so that he may use this information for the better development of his nature and the analyzation of life and its motives. This institution with all its riches will avail nothing unless the taste for reading and the faculty of discrimination of literary values be developed in the children of our public schools. As a distinguished educator has said: "Literature should be encouraged at the time when the interest is so easily aroused; when the sympathies are so keen, when the mind is so open to impressions, and the memory tenacious; when the tastes are so unperverted and the capacity for forming ideals is so strong; when the taste for reading is so marked and leisure time for reading so free."

The class library idea, tho of recent origin, has proven of such value that educators have declared it to be one of the most significant and wholesome phases of school administration. A course of instruction which makes the use of children's books possible becomes less burdensome, richer, and suggests a better correlation of studies. The class library has proven itself to be the broad avenue to the study of nature, biography, geography, and history, and to be the highest interpreter of these subjects. As the use of the text-book is becoming more limited, its place and importance are more clearly defined. In lieu of a host of text-books, educators are providing a wealth of choice and beautifully illustrated literature for children. Beginning with Mother Goose, the child is led on, uninterruptedly, step by step, thru the fairy tales, folk lore, and Indian legends until the beauties of the greatest masterpieces of our language become a part of the child's life and expression. The mastery of a classic in its entirety is a great victory for the child and the knowledge thus gained is his own possession. It is claimed that by means of the "library book" a class interest is secured and a wholesome class spirit established. The power of attention and concentration is developed; the reasoning faculty is strengthened; the memory becomes more receptive; and the power of imagination, the greatest of all innate forces, becomes a headlight for action, which will serve the

child, as it has the greatest of men and women, in the achievement of life's best work.

In order that marked results may be obtained from the organization of class libraries, experience has proven that about fifty books should be placed in each classroom, the literature being especially adapted to the mental ability of the children and related only incidentally to the work of the grade. The books should be selected by the superintendent of schools in connection with the librarian of the free public library and the literature chosen should be simple in thought, artistic in form, and choice in language. If, however, a smaller number of class libraries were advised, their organization should begin with the fourth grade, be extended to the eighth grade, and subsequently to the lower grades. It has been shown that children from ten to twelve years of age are omnivorous readers and are more easily influenced by literary associations than are children of an older age. Furthermore, if class libraries are first established in the eighth grade as an experiment or for any other reason, the undeveloped mind of the child in that grade will demand literature of a lower grade type, as the fairy tale, the literature of folk lore, and the myth: this is natural because his appetite for that kind of literature has not been satisfied and he craves the nourishment. In the choice of books children should be allowed the greatest freedom, to browse at will and select books for themselves, to take them home to read to their parents and to read and reread those which they like best. A good plan for distribution and return of books would be to set apart a short time at the opening of the afternoon session on Friday for their return and a few minutes at the close of that day's session for their distribution.

The fullest and best use of the class library depends upon the class teacher. It does not, however, demand special qualifications on her part to carry on the work effectually nor does it add to her burden; it is simply a powerful agent in her hands for the formation of character and the enrichment of child nature. It is possible and advantageous for her to refer to characters and incidents found in the books for example,

comparison, and discipline. If she is familiar with its literature she may, at the psychological moment, use portions of a story to stimulate the listless boy to action, to find employment for the idle, to arouse interest in the recitation, and to promote class spirit in a free and a common interest. As an occasional exercise, the use of the class library may be extended by requesting a child to discuss the book which he has read, its characters, plan, and story; to reproduce certain portions of the story orally or in writing; he might be requested to explain why he liked or disliked the book, what characters were best suited to his taste and why, what author he likes best and why, to what class of literature the book belongs, what other book it resembles, the class of books he regards as the most interesting and helpful to boys and girls, and what books he would like to purchase for his own library.

The school library should be limited to an economic portion of the school expenditures; and the supervision of library work in the public schools should be commensurate with its importance and receive recognition equal to that granted to the supervision of other branches of public school work. The plan for supplying the necessary reading for children in some cities is the authorization by the several boards of education of an open list of supplies for the elementary and higher schools, which list is extremely valuable as a text-book list but cumbersome and indefinite as to its supplementary reading books. The better plan seems to be the limiting of that supply list to text-books alone, to publish a separate graded and annotated list of books suitable for class library purposes, and to designate these volumes for use in the grade or grades for which they were especially written and adapted. With the principal of the school or one of his assistants in charge of the teachers' library and the class teacher in charge of the class library, the introduction of a public school library system into the public schools of a city could be effected with small cost for administration. The main expense incurred would be the original purchase of books and the subsequent cost of repairing and replacing them.

The objection so commonly raised, that the school library

would limit the scope and usefulness of the free public library, is without justification. Under proper supervision the school library is bound to be limited and serves only as a stepping stone to that storehouse of material which the public library offers the teacher for her pleasure and profit; while the class library introduces the pupil to the public library and teaches him how to use it. If, at the end of the public school course, an opportunity is afforded the child to attend high school, college, or university, the library becomes a fountain of knowledge for him, and the freedom with which he is enabled to make the most of the means at his command marks progress and conserves energy. If the opportunity for higher education is denied him, a substitute is offered in the free public library, the most powerful and far-reaching educational organization in existence, whose business it is to educate and train all men who seek aid in whatever line of activity they may be engaged. Theoretically, the same principle which established and maintains the public school supports and justifies the existence of the free public library. The school and the library are the two great educational forces of the people. If the home, the school, and the free public library are to be unified and made serviceable as a means of education and as centers of literary culture, we must develop and maintain a graded system of school libraries as training schools.

Educational progress not only demands that the pupil upon leaving the public elementary school should have an intimate knowledge of the great literary masterpieces, but that the public schools should be actually held responsible for the control of the reading of the coming generation. It is an intensely vital question, and the leading educators of the day have directly identified themselves with the establishment of class libraries in the larger city school systems or have indirectly recommended their organization on platform and in press. As a result of this agitation almost every large city in the union has provided school libraries for its teachers and pupils. The manner of organization and administration vary in each city: *there is no universally accepted plan.* In New York city the appropriations have been large and, under

competent administration, the work has been remarkably successful. The books are selected from an open list by the principals of the schools, which list has been prepared by the department of superintendence of the board of education. The result of the system in this city is that New York, with its 484 public school libraries, " is operating one of the largest circulating libraries in the world with practically no expense except for books." In Utica a more specific selection of books is made and a graded and annotated list, based on the course of study, is recommended and published jointly by the public library and the public schools. In Newark, besides providing a children's room in the main library building, two types of school libraries exist; first, those owned and maintained by the individual schools; second, those furnished by the free public library. The latter institution invites teachers to select forty or fifty books, such as they desire to have their children read, and these are sent to the schools in inexpensive bookcases and kept there for an indefinite time. The invitation is extended to every teacher in the public schools of Newark and the majority take advantage of it; besides, the close coöperation which exists between the teacher and the librarian results in mutual benefit.

In Baltimore there are class libraries in most of the schoolrooms, and the board of education is aiming to have one in every room. The superintendent, in answer to an inquiry concerning the number of class libraries established in that city, writes, " The feature is so commonplace nowadays that it would seem to need no special advocacy. It is hard to understand how satisfactory school work can be done with modern curricula without books at hand for the use of teachers and pupils." In addition to these class libraries, the schools have the coöperation of the Enoch Pratt Free Library, which institution sends large book supplies when desired. In Chicago all of the public schools are provided with class libraries, and in nearly every case one hundred dollars was originally appropriated by the board of education for their establishment. In St. Louis there are about 150,000 volumes in the school libraries of the various schools of the city. In

addition to the school libraries furnished by the board of education, the public library furnishes books to the schools, making, in fact, each school a library center. The difference between the sources of supply is this: the board of education furnishes books for class use, not less than thirty copies of each, which remain the permanent property of the school; the public library furnishes both books for class use and also individual volumes. Statistics also show that about two-thirds of the states in the union provide for the establishment and maintenance of public school libraries by school law, while in many of the remaining states and cities, school libraries are provided for and maintained by philanthropic organizations and institutions.

The same pedagogical principle which advocates the establishment and maintenance of class libraries in the elementary schools warrants the institution of a general reference library and a series of graded class libraries in the higher schools.

There the number of volumes per class should be determined by the size of the class and should be adapted in style and content to the grade of the pupil. These graded class libraries may be placed in one general library room, the largest and best lighted room in the school building, or on separate floors or rooms, which plan is perhaps the better, as it makes each class library the property of the student and does not embarrass him with a superabundance of material. In a school system which provides district high schools, widely separated from each other, each high school must of necessity have its own reference library and its series of class libraries; but in cities in which the higher schools are centralized a central library should be provided. This library should be replete with literature pertaining to the work of the school, including literature for information as well as for culture, and should aim to meet every demand of instructor and student. The central school library plan is an economical one and well adapted to cities of moderate size. It enables the student to experience in a more positive manner a library atmosphere, and to feel a greater freedom in the use of the library. In the high school library the books should be selected by the superintendent of schools with the coöperation

of the librarian of the public library and the work of accessioning and cataloging should be done at the central office of the board of education. The higher school libraries should be open for reference and circulation from 8 A. M. to 9 P. M. and on Saturday the entire day if there is a demand for it.

For several years many of the state normal schools and larger universities of the country have provided for their students courses of instruction in library administration. It is claimed by educators and librarians that such instruction has as definite a place in the general scheme of education as have physics and chemistry. The object of such instruction in the higher schools is to teach the student to control a library in an economical manner; to make known to him the main book resources of the country; to acquaint students with the bibliography of various subjects; to divide for them the great classes of knowledge and to show the relation of one subject to another; to familiarize them with the general facts of library legislation so that they may be able to decide upon matters pertaining to public library administration as intelligent citizens; to advise them to look to the public library as a public educational institution in the community and to use it as such. At its last meeting the National Educational Association recommended the adoption of a course of instruction in library administration in the normal schools thruout the United States. It is to be hoped that this is the forerunner of a similar course of instruction, not only in our normal schools, but in all higher schools connected with city school systems.

The teacher and student of pedagogy should be encouraged and aided in their professional work by the establishment and maintenance of a well-equipped pedagogical library, the final crowning point of a public school library system. This library should be located in the central part of the city and controlled by the city board of education as a branch of their administration. It should be maintained for the use of any one engaged in the study or practise of pedagogy; for the members of the board and their employees, for the principals and teachers of the elementary and higher schools, of normal schools and schools of pedagogy, and for the students of peda-

gogy in nearby colleges and universities. It should contain the best books on education with its many sub-subjects and closely allied subjects, and the selection of these books should be in the hands of pedagogical experts. It should exhibit a collection of text-books used in the city schools in which the library is located, with the more important text-books used in other cities and copies of the newest text-books as they appear from the publisher. A collection of rare and old-style text-books would aid in making a comparative and interesting study of the progress of the art of text-book making. A pedagogical library should contain a complete collection of lantern slides suited to the work of the elementary and higher schools and cataloged by grades and subjects. These should be loaned with all necessary apparatus to the schools and a messenger should be employed to deliver them to the schools and to call for their return. There should be an exhibition of the classroom libraries as found in the elementary and higher schools with a good collection of other juvenile literature and samples of the newer children's books as they are published. An educational museum confined to the work of the public schools and containing objects of interest in the study of nature, science, and art would be of extreme interest and value to the teacher in the public schools. Collections illustrative of the advances made in inventions, industries, science, and art could be temporarily loaned and exhibited. Lastly, the pedagogical library would be able to fill its highest purpose and most important place in the public school library system if boards of education would authorize the preparation of courses of reading in pedagogy and in closely allied subjects for those teachers who desire to continue their studies without attending regularly upon prescribed work in an institution; and, if these boards of education, thru their boards of examiners, would credit such teachers on the eligible list with a higher degree of scholarship.

As is seen from the foregoing statements, the need of a public school library system is universal and a well defined plan of organization and administration should aid in its establishment. The system is not impracticable, because the prog-

ress of education demands it; its organization and administration do not necessitate the appointment of a score of assistants, for under the special direction of the superintendent of schools in the central office of the board the entire system would be enabled to care for itself. It is not extravagant, because it suggests a wiser and more economical expenditure of the city's appropriation of moneys to schools and libraries, defines the scope and place of the school library and the public library, and provides for the coördination, support, and development of both. It is not an extension of the public library, conceived and nourished by that institution as a larger field of action, but it is a pedagogical necessity, the place where and the means by which the work of the free public library is perfected. It is not a scheme for publishers and booksellers to further the interests of their trade, for the system would be controlled by disinterested superintendents of schools, to whom the idea and need of a system have long been known and experienced, and upon whom rests the responsibility of a wise selection of books and a proper supervision of the work.

A public school library system is the natural outgrowth of the leading modern theories of education and is one of the most effectual means of accomplishing proposed and desired results in educating children. It correlates the great forces at work in the modern school curriculum and brings about a closer unity of thought and definiteness of purpose in education. It brightens the form studies and engenders in the mind of the child a keen appreciation of the culture studies; it affords increasing intelligence thru life and insures continued happiness. If educators require a knowledge of books and the use of the library as an unwritten part of the course of instruction, and if the art of reading is a necessary equipment for the pursuits of life, is it not mandatory for boards of education to provide school libraries for the children of the public schools and for that army of teachers and students who represent the educational interests of the country?

LILLIAN IONE MACDOWELL

PEDAGOGICAL LIBRARY
PHILADELPHIA, PA.

VI

PHYSICAL TRAINING AND ATHLETICS [1]

From time immemorial the flesh has lusted against the spirit and the spirit against the flesh. Religion has despised and maltreated the body and the distracted body has in its turn retorted with sins and crimes against religion. The scholar in his search for knowledge has impaired his eyesight and ruined his digestion, whereas the bon-vivant or voluptuary in the process of satisfying his many senses has starved his solitary soul. Thru aggravated and long-continued intellectual strain the nerves of the financier are shattered and his body brought to the verge of dissolution, while thru an equally unqualified absorption in physical enjoyments the intellect of his son is not infrequently dissipated from mortal view. The professor rebels against the necessity of taking a walk and of absenting himself, at stated intervals, from the fascinations of his book, whereas the schoolboy flings *his* book into a corner and rushes out of the classroom in a delirium of delight when the opportunity for becoming an animal once more arrives. Such are common and well-recognized samples of the antagonisms which mind and body display toward each other and which must certainly be mitigated or overcome if men are to enjoy both healthful and efficient lives. A one-sided development in which thought is sacrificed to muscle or muscle to thought can neither be rationally advocated nor justly admired. Neither the empty-headed athlete nor the physically disabled scholar is the type of citizen we either wish or need to educate. The true aim of education is the evolution of the man, and altho division of labor and specialization of function are necessary factors of development, they can not be regarded as contributing all they might to the public good when

[1] Paper read at a meeting of the College Presidents at Cornell University, June, 1907.

they breed a contempt of one class of workers for another or help to obscure the fact that we have many members in one body, be that body political or physical, and that a rational care for all the members is a social as well as an individual obligation. The proper education of the men and women of this Republic must therefore be such as takes into account both physical and mental functions and seeks to produce not only trained intellects but strong and vigorous bodies. Physical education is therefore a necessity.

Nevertheless, if we except the Greeks, it is only within comparatively recent years that education has been spoken of and conducted as if it were anything more than a concern of mind and morals. The claims of physical education have either been contemptuously slighted or wholly ignored. Things have indeed altered very much for the better during the past few decades. Gymnasiums have multiplied not only all over this country but in foreign parts, and the well-trained physical director is now regarded as a necessary member of the teaching staff of every well-equipped institution of learning. The labors of Jahn in Germany, of Ling in Sweden, of the Maclarens in England, and of Hitchcock and Sargent in the United States have brought forth many welcome and beneficent results; and yet there can be no question that the need of physical culture has not as yet obtained that hold upon popular imagination, or that influence upon academic judgment and activity, which from the nature and importance of the subject it unquestionably merits and ought to have. The choice of "Physical training and athletics" as a topic for discussion at the meeting this morning is therefore a wise and timely one. The present speaker has simply been asked to introduce the subject in a paper of some twenty-five or thirty minutes in length. His function, then, is a very modest one. He is but the humble porter who is to open the door of the arena in which the distinguished athletes of Harvard and Cornell are subsequently to compete for your instruction and enlightenment.

Proceeding at once to the matter in hand, I shall treat physical training and athletics as two coördinate spheres or aspects of physical education. Their relation to each other may be

conceived as that of discipline to play or of science to art. Physical training is, of course, much more than a propædeutic to sport and has as its immediate objects the correction of physical defects and the evolution of physical excellencies; and yet physical training in order to be successfully taught in our schools and colleges needs, in the great majority of cases, both the physical and mental stimuli which sports provide. No normal person takes naturally to discipline, *qua* discipline. To be told that mathematics is good training for the mind does not insure either the intelligent or ardent pursuit of this branch of science. To do good work at it a man must either love mathematics for its own sake, in which case it ceases to be a conscious discipline, or else perceive its ulterior business or professional advantages. Physical training is therefore related to athletics as disciplinary or required exercise is to the exercise that is voluntary and free. It is the methodical and sometimes rather irksome activity to which we submit ourselves for the sake of another activity which we are subsequently to enjoy. I remember once standing for an hour or more on a golf tee, and in the broiling sun at that, fulfilling the commands of my trainer. He never even permitted me to have a try at a real ball but kept me twisting my left foot and turning my body and swinging my club and "following thru" until I should acquire the proper pose and movements to justify the beginning of the game. To all this I patiently resigned myself, in order that I might a little later enter into the sport and get the recreation and amusement it promised me.

I shall therefore define physical training as methodical and systematic exercise conducted under the eye of an expert for the purpose of making people physically fit; fit for sport, fit for study, fit for business, and fit for the manifold activities of the citizen and the man. Let it then be understood at the outset that physical training as a necessary part of physical education has a much more comprehensive and important object in view than the provision of good material for college ball teams and competitive athletics. Needed as it is to prepare men for the exertions of the boat race or lacrosse game, the area of its application is one of much wider scope than that afforded by

the chosen few who win the coveted positions on the 'varsity. Also the purpose it has at heart is one that far outruns the ephemeral strifes and victories of the college campus. Physical education has the health and welfare of the human body on its mind and on its conscience. The human body is sacred to it not only as in itself a wonderful organism but also as the associate and vehicle of mind. It therefore sets itself the preliminary task of training the body by such well-approved exercises and appliances as shall fit it for its intellectual and moral undertakings. It holds with the ancient Greeks that there should be a unity in education, and that no system of education is complete which does not train both body and mind. To achieve this result, however, many difficulties must be overcome. There is the instinctive repugnance of the animal to the restraints of discipline; there is the decided human preference for that form of experience that is picked up empirically and in the course of electing what one likes to do rather than for that other and more prosaic phase of experience which is acquired by prescribed and scientific methods; there is also the indifference, if not hostility, of many of the intellectual trainers of our youth and the unquestioned ignorance of the public at large. These are grave difficulties, but they are not such as can not in time be removed or minimized by patient work and intelligent exposition.

To bring about this desired result it is necessary that it be widely and clearly understood just what physical training is and that its methods, as employed by expert teachers, are based on sound and scientific knowledge. Second, the grounds on which it is urged should be made known to all, and the uses or advantages which it entails brought home to men. Third, it should be made evident from press and platform and thru every legitimate channel that the true motivations or incentives to physical training are of the highest intellectual and moral character. Let me expand in very brief form the points just enumerated.

What physical training is we have already seen. It is methodical and systematic exercise conducted under the direction of a competent instructor, and graduated and adapted as

far as possible to the condition of each individual student. Such work as this demands as its inevitable antecedents careful anthropometric measurements and a thoro medical examination. Light or heavy gymnastics, the use or avoidance of special apparatus will, according to the exigencies of each particular case, be prescribed.

Certain of the more important grounds for establishing physical training in all our schools and colleges, and for including it in the required curriculum, are as follows: the large number of boys and girls who suffer from bodily insufficiency or defect—for strong and well-developed children are largely in the minority—the evil consequences of cramped positions in the classroom, too protracted study or confinement, the danger of engaging in games for which the student is not physically fit, the fact that youth is the time when well-applied physical training can produce lastingly beneficial results, and the further facts that lung expansion, good circulation and digestion, and well-nourished nerve cells are things of moment not only to the health of the body but to the efficiency of the mind.

The uses of such systematic exercise become at once apparent from the nature of the grounds which have just been detailed. By exercise the respiration is stimulated and chest capacity increased; by exercise circulation becomes more rapid and waste products are eliminated; by exercise the weak are made strong and the strong are preserved in health; by exercise the drooping head may be raised erect, the flat chest expanded, the hollow back filled out, and often enough lateral curvature of the spine avoided or removed; by exercise men are rendered more highly capable of productive study and purity of habit, less liable to depression of spirits and mental lassitude, and better qualified to delight in the pastimes and engage in the duties of college life.

Such being some of the admitted benefits which well-regulated physical training may bring not to the school and college athletes alone, but in a greater or less degree to every young man and woman, it is evident that not merely a few but all of our students should be led to avail themselves of them. To

this end, and as youth is constitutionally averse to discipline and indisposed to be methodical, physical training should, in the judgment of the writer, be required of all our school children as well as of all our college undergraduates thruout the sophomore year. It should be understood that the gymnasium is provided for the health of the entire student body and not for a limited number of prize athletes who are to represent the institution on the gridiron or on the diamond. For it is a much lamented fact that, as things are at present, those who stand most in need of special physical training receive the least of it while those who, by the gift of nature, are exceptionally strong and well formed are, at lavish expense, put into the pink of condition, and sometimes overtrained and out of condition, in order that they may take part in those gladiatorial shows and contests which so delight loyal alumni and are believed to be the best advertisements of Alma Mater. Physical training should then be for all and should be required of all, and parents in their homes and trustees in their boardrooms should be persuaded of the fact that boys and girls need sound hearts and good stomachs as well as pure characters and well-cultivated minds and that, other things being equal, their minds will be more efficient and their characters less liable to stain if their bodily functions are properly exercised and their bodily needs adequately met.

It ought to be said at once, however, that even if the rule of compulsory physical training were universally adopted the best results of such training could not be attained unless at the same time the interest of the students were aroused. Mere bodily routine, no matter how scientific its character or how competently conducted, can not furnish even the physical advantages desired unless the heart and mind are enlisted in its service. To take exercise just for one's health alone, or for the purpose of keeping the bodily machine in good working order, is one of the dreariest and least exhilarating of occupations. Who could enjoy even his dinner and get physical profit out of it, if it were eaten under a stern sense of duty and with the exact amount and kind of nourishment mathematically calculated beforehand? Such prescriptions, when neces-

sity commands, can be endured for a time; but, if long continued, they become but the accompaniments of confirmed invalidism or the causes of hypochondria and bodily disease. Physical education, therefore, comprehends much more than physical training, just as intellectual and moral education include much more than ethical and mental discipline. True education, indeed, be it of mind or body, must always outgo the idea and atmosphere of drill and routine. To achieve its best results it must captivate the imagination, the conscience, the heart. To achieve its best results it must enlist the whole man in its service; so that, whether he is working out a formula in the laboratory or swinging clubs in the gymnasium or playing ball on the campus, he recognizes, consciously or unconsciously, that this particular act is but part of a great whole and that he is perfecting a piece of detail or repairing a bit of mechanism in order that some beloved object may be won or some ideal realized. In other words, it is when routine is inspired by some intellectual or moral motive that it is most highly effective and beneficial. It is when physical training has a spiritual incentive that it does its perfect work.

Thus are we brought to the motivations of physical training. As is well known the Greeks practised gymnastics or systematic bodily exercises in order that they might triumph in war, develop beauty of form, excel in intellectual pursuits, and be victorious in feats of physical prowess and in games. As for ourselves, the time has gone by or ought to have gone by when warlike or pugilistic instincts may be conscientiously appealed to in our schools and colleges as a motive for physical training. Even the noble and manly art of self-defense, so dear to the Anglo-Saxon heart and fist, is hardly the true incentive to physical education. Comforting as it may be to carry within the breast the consciousness of being equipped and ready to thrash any man who is disposed to be disagreeable or insulting, a state of preparedness such as this is not unlikely, in civilized districts at least, to lead to certain deplorable events of a character similar to those which often accompany the carrying of concealed deadly weapons. Besides, the disposition to spar and fight, if the sittings of the late Peace

Conference in New York are any safe guide to judgment, is still sufficiently instinctive and robust to need no artificial stimulus or coddling.

As for the love of beauty, on the other hand, we wish it were more deeply seated and more widely distributed in the nature and life of our fellow-citizens than it is, but having once made declaration of this praiseworthy and pious prayer we are compelled to admit, however reluctantly, that the esthetic outfit of young America, or of young Germany, or England for that matter, is far too sparse and undeveloped to render any appeal to it as a motive for physical training either practical or profitable.

What is, however, both practical and profitable as an incentive to physical education is the hope and ideal of manhood and the aspiration to become efficient citizens of a great country and worthy sons of a yet greater race. *Sie werden Menschen,* these young fellows of our schools and colleges, and everything that goes to the making of the man appeals to them. They admire Governor Hughes because of his upright character and because of his honest and democratic determination to render the good will of the people effective in government and law. They admire Secretary Taft because of his efforts to pacify the Cubans and educate the Filipinos and help them both to be self-regulating and self-directed peoples. They admire Secretary Root not merely because he adorns a great office with rare gifts and distinguished abilities, but because he is willing to forego the income of a large practise in order that he may serve the interests and the welfare of the State. They admire Theodore Roosevelt not simply for the reason that he kills bears and does dare-devil tricks, but because he is not afraid to fight corrupt and tyrannical corporations and is anxious to preserve, despite his bellicose qualities, the liberties of the people and the peace of the world. Such are the characteristics our young folks admire—moral courage, intellectual ability, self-sacrifice, leadership, the sense of public obligation, and the love of liberty and right; everything, in short, that goes to make a strong, brave, capable, and public-spirited manhood.

For such a manhood and for all of work or duty that it inevitably involves a vigorous and healthful body is indispensable. In order that he might possess such a body and keep it adequate to intellectual and moral tasks Mr. Gladstone swung his famous ax. For like ends Mr. Balfour plays golf and Mr. Cleveland hunts and fishes. In every one of these leaders, no matter what his love of a particular sport, the dominant inspiration to physical exercise was or is the desire to do a man's work and to play a man's part in the world. Now it is such high motives as these to which our young men are susceptible and which in turn may be successfully addrest as spurs to physical training. These young men may be induced to submit themselves to discipline if they can but see its bearing upon life. They are ready and willing to train if it be recognized as necessary to the achievements and successes of the man.

But youth is impatient and the free life of manhood looks a long way off to high school boys and college freshmen. They ask, therefore, and not unnaturally either, that they at once do something in the way of putting their training into practise. They ask for some object to train for and in which they can realize the satisfaction of results, some form of activity in which they may cultivate skill or prowess and develop the qualities of endurance and initiative, ingenuity and leadership. It is, therefore, as a form of life or as a sphere for the free and voluntary exercise of human powers that athletics commend themselves to the educator and supplement the drill and discipline of the gymnasium and the classroom. In athletics the opportunity of action is presented to the schoolboy and the collegian and the chance to play the man brought home to him. In sport or play, notwithstanding the evils to which it is open and the criticisms to which it is exposed, the very finest qualities of the man may be and are developed. To fight hard for victory and obey the rules of the game requires not only moral courage and physical stamina but self-restraint, good judgment, and self-sacrifice. To see and grasp an opportunity of success not only demands but elicits quickness of perception and fertility of resource. The need for team work in particular, which in the great majority of our college sports is

strongly felt and emphasized, assists in pointing the important lesson of self-subordination and the paramount duty of sinking the individual in the triumph of the general good. I know, of course, that there are those who strive for grand-stand plays in athletics just as there are those who play to the galleries in the Senate, but on the whole and all round it may be truly said that work for the team and college is the prevailing and predominant characteristic of academic sport. It is, therefore, as a form and theater of life that athletics are supremely valuable. They teach men to be cool in the moment of emergency and undiscouraged and unconquered in the hour of defeat. They teach them to play a losing game with grit and courage and to wrestle manfully unto the end for the honor and prestige of Alma Mater. They furnish the vital application points for physical and mental discipline and supply those free and voluntary exercises which are the needed complement of training and routine.

For this last reason athletics are of course and must be elective, for a compulsory sport is a manifest absurdity. And yet altho, from the nature of the case, college men can not be compelled to play games, it is, I believe, highly desirable that they should be advised and encouraged to do so. If sports have the place and function in physical education which I have just endeavored to describe, it is of the utmost importance that not a small number of our collegians but as many of them as possible be persuaded to engage in them. Not less athletics but more athletics is, then, the thesis I am prepared to defend. Not of course more athletics in the sense of inducing those who are already too deeply engrossed in sport to devote themselves to it more unreservedly than ever, but more athletics in the sense of athletics for a larger proportion of the student body. College men need the free exercise of play as well as the compulsory exercise of discipline and, therefore, instead of limiting our games we should be ready to so increase and vary them that every man, except the cripple, could find some sport adapted to his physical strength and mental needs. To this end, I believe, it would be wise to reduce the number of intercollegiate games and to multiply the games between classes. It is also in the inter-

ests of good scholarship as well as of habits of steady work that fewer trips abroad be scheduled and more home games developed; but sport as an application point of physical training and as a mode of life should receive the cordial sympathy and backing of college faculties.

But are not athletics already overdone, some one asks, and may we not have too much of them? To which it may be replied, "Undoubtedly athletics are overdone by certain students just as other students stick too persistently at their books." Along any line of pleasurable activity there is always danger of excess, and yet if the activity be in itself a useful form of functioning the fear of intemperance should lead us not to prohibit but to regulate it. What we need in sport as well as in work is the σωφροσυνη of the Greeks, the virtue of moderation; for, after all, the chief evils of athletics, as at present played and followed, are neither intellectual nor physical, but moral. It is professionalism and commercialism, with all their attendant vices, which are their bane; and here as everywhere else it is the bad example of their elders from which the boys are suffering. It is a great misfortune that our national game of baseball is to all intents and purposes professional in character. It is the Giants and the Cubs who set the pace and give the tone and show their juniors how the game is to be played. It is from the various league teams, whose members are bought and sold in the open market, that the college man takes his cue. Hence it is that to deceive the umpire, to wrangle over a doubtful decision, to rattle the pitcher, to disconcert a fielder who is trying to bring off a catch, and many other forms of discourtesy or fraud are openly practised and unblushingly condoned. It is thus that the true spirit of sport has in great part disappeared and the habit of downing an opponent by any means and of winning at any cost—the habit of Wall Street and the Polo Grounds—substituted in its stead.

And it is here, if the suggestion may be made without incurring the railing accusation of pessimism and anglomania, that we may learn a lesson from the mother country. The county cricket elevens of England as well as the elevens put into the field by the Marylebone Club are made up of gentlemen and

professional players, but it is the spirit of the gentleman that governs the play and inspires it thruout. It is not the professional who dominates the game and gives it its tone but Eton and Harrow, Oxford and Cambridge, and all those, the land over, who have been trained to honesty and fair play and who have been brought up in an atmosphere of courteous and honorable sport. Hence it is that a responsible English cricket field is never disgraced by such scenes as are common on our own. Not only are the lives of the umpires quite safe and their decisions above dispute, but the visiting eleven is never assisted to lose the game, but rather given every chance the law allows to win it.

And if we are to make sport what it ought to be in this country and redeem athletics from the stigma and reproach they bear it can only be by the wise and laborious effort of college men. And to this end it should be college-bred men and not professionals who train and coach our teams and enter into close and intimate contact with our boys. The status of the Physical Trainer should be raised, and he who has charge of physical education should everywhere be recognized as one who has as honorable and important a mission as he who teaches chemistry or Latin. It should not be forgotten that the gymnasiarch had his place by the side of the philosopher in the faculties of the Lyceum and Academy.

What the present situation in athletics demands, therefore, is not the hysterical condemnation of anemic scholars who never played a game of ball in their lives, nor a largely increased number of faculty rules and restrictions framed by those who have forgotten that they were ever young, but a sympathetic treatment of the whole problem by those who know what sport is, the rôle it ought to play in physical education, the force it is capable of becoming in forming citizens and shaping men, and above all by those who love young men and who work to see them go forth from their Alma Mater with sound bodies and sane minds and with consciences incapable of prostituting sport to the vulgarities of advertisement or of taking an undue advantage of an opponent or of winning by foul or dishonorable means.

It has not infrequently happened that the virtues inculcated in the home and in the society of gentlemen have been lost in the stables and in the companionship of jockeys, and it is therefore quite possible that the high standards raised aloft by the scholar in the classroom may be lowered or removed by the professionalism of the ball field. See to it, then, that the conduct of college sport is put in proper hands! See to it that the instructors in physical training and athletics receive an honored place in college life! See to it that our boys are taught to fight fair and scorn deceit and play the game for all it is worth, and there will issue from our academic halls a set of men who will be all the better citizens for having played ball, and all the healthier in body, mind, and conscience for having taken part in athletics.

LANGDON CHEVES STEWARDSON

HOBART COLLEGE

VII

THE EDUCATION OF THE NEGLECTED RICH [1]

As matters stand in the United States today, the child of parents in moderate circumstances—oftentimes very moderate, indeed—receives a better training for life and therefore has a greater opportunity to make something of himself than the child of rich, particularly of very rich, parents. The child who, under our present laws, is to inherit great wealth, and, potentially, great position and great influence, too often is not given a fair chance to become a decent, intelligent, self-respecting citizen because of the folly or neglect of his parents.

To begin with, except in a few large Eastern cities, the child of parents in moderate circumstances goes almost uniformly to the public schools. There he receives invaluable discipline and has invaluable associations. Paltry excuses for tardiness and absence are not accepted, and the first great lesson of practical life is silently learned—punctuality and regularity in keeping engagements and in the discharge of daily duty. Moreover, he is one of a class or group made up of children of parents who pursue many different occupations for a livelihood. From them he learns early in life that natural ability, good sense, friendly companionship, and high purposes are just as likely to be characteristics of the child of the carpenter or the bricklayer as of the child of the lawyer or the large manufacturer. He is prevented from developing that universal foundation of caddishness and snobbery, a false class consciousness. When he goes to college, as he does in large numbers, East as well as West, he goes to work, to make good use of his opportunities, and to fit himself for intelligent citizenship, no matter what his future profession or calling may be. Thousands of such young men and women are graduated from the American

[1] Reprinted, by request and with permission, from the New York *Evening post*, September 28, 1907.

colleges every year, and they are the very stock and stuff of the communities in which they live.

The child of the rich ordinarily has no such chance. To begin with, he has no fixed abiding-place. His parents drag him about from place to place, as their own whims or the demands of fashion dictate. Schools open in September, but to return to town before some horse show or other similar event on the social calendar is not "smart." Consequently, if the child is at school at all, it is late November at best before he begins his regular studies, and even then they are constantly interrupted for all sorts of inadequate reasons. Perhaps in February or March there is an absence of from two to four weeks, and by April 15 or 20 at the latest the country house must be opened, altho schools go on for some six weeks longer. So it comes about that the school life of such children, short enough at best, is constantly interrupted, and most of its possible good effects are never gained at all.

Moreover, when such a child is at school, he is in almost every case in close, or even sole, association with other children of the rich, and so from the very first he is made to feel as a member of a class apart—the worst possible preparation for life in the American democracy. Again, the school that he attends is almost certain to be one which depends for its existence on satisfying the parents' whims, and all else is subordinated to that end. It is needless to say that under these circumstances anything approaching a systematic and judicious training of mind and character is quite impossible.

Should the child be committed to the mercies of a private tutor, matters are in no wise improved. Teaching a child apart magnifies and develops all his idiosyncrasies, deprives him of the opportunity and aid of companionship and healthy emulation, and builds up a dismal sort of self-consciousness which is unfortunate both at the time and later in life.

Things go from bad to worse when such a boy passes to a boarding-school of a well-known type where only children of the rich can or will go. The weed snobbishness grows where character ought to be, and study is too often subordinated to sport. Finally, by dint of immense effort and the aid of

special "coaches" who come down to the school each April and May for the purpose, the boy is hoisted over the entrance examinations for a hospitable college—and then left to his own limited and rather dingy resources.

From his college life such a boy gets little or nothing. He associates almost exclusively with others of his own kind, often only with those who have come from the same school as himself. If he aims at any distinction at all, it is pretty sure to be social; occasionally it is athletic; almost never is it scholarly. As a rule this type of matriculant loafs his way thru college, hires a substitute for such of his tasks as a substitute can perform—substitution at a formal written examination has been known to occur—scrapes over the various academic barriers to graduation, and after three or four years is graduated, and is eligible to membership in any university club in the land.

Any one who imagines that this is a fancy sketch is not observant of what is going on under the shadow of great names and splendid traditions. He does not know in how many scores of cases this process, or something very like it, is gone thru with every year. To boys of this type a college is never thought of as an educational institution; it is a social opportunity, an agreeable country club, where one takes his valet, his polo ponies, his bulldog, his motor car. Naturally enough, the responsibility of being rich weighs lightly on a boy so brought up, and thereby wealth abdicates its natural and just position in the community.

For this condition of affairs the parents are principally and chiefly responsible. With low ideals of life, or no ideals at all, they neglect the education of their children until it is too late. They inflict a positive injury upon the body-politic by leaving large fortunes to uneducated, untrained children, with no sense of public responsibility whatever and no ideals other than those of public display and personal enjoyment.

There is very little real antagonism in America to wealth as such. Almost all that exists has been sedulously cultivated by agitators, political and social. There is, however, plainly growing a resentment to the ill-use or abuse of wealth and

its attendant responsibilities by the children and grandchildren of those whose industry or foresight brought the family fortune together. This ill-use or abuse of wealth by the younger generation is the outcome, chiefly, of bad education or no education at all—for it is quite possible to pass thru school and college and remain uneducated.

There is only one solution of this problem, and that is for the rich parent to treat the education of his sons and daughters as a matter of supreme seriousness. He must charge himself with the responsibility of making sure that their habits of mind and body are regular and sound; that their study and their play are not clique-study and clique-play; that without necessarily aiming at high scholarship, they get serious and systematic instruction and discipline in those subjects which broaden and inform the mind and give it a rational and well-balanced outlook on life: and finally, that their ideals of conduct are such as to make them good, law-abiding, responsible citizens, able and willing to bear their share in forming public opinion, and in contributing to the life of our democracy.

There will be no public prejudice against such representatives of wealth.

The obstacle to this very simple scheme of improvement is to be found in the folly and indifference of the fathers and in the vanity and false pride of the mothers.

Perhaps the mothers are even more blameworthy than the fathers. They are the easy prey of educational charlatans who thrive off their queer compound of egotism and ambition. They live in a world of unrealities and shams, and if they have a twinge of conscience occasionally they quiet it by assuring themselves that they are doing just what all the people of "their set" do.

It is genuinely distressing that the names of the great fortune-builders in America should in the second and third generation be so frequently associated in the public mind with bad habits, wasted lives, and frivolous occupations. From these young people any sense of responsibility, whether toward the public or toward their family name, is apparently wholly lacking. Perhaps one ought not to look for *noblesse oblige* where

there is no *noblesse,* but the outcome is certainly unfortunate.

The rich boy who receives a good education and is trained to be a self-respecting, responsible member of the body-politic, might in time share on equal terms the chance of the poor boy to become a man of genuine influence and importance on his own account. Just now, by the neglect, or worse, of his parents, the very rich boy is apt to be relegated to the limbo of curiosities and, too often, of decadents. It is true that the number of such boys in the whole community is not very large; but the publicity which unfortunately attaches to every slightest movement or action of themselves or their families, lends undeserved weight to their example.

We have managed here in America to make fairly adequate and suitable provision for the education of the children of the poor. But the rich we have always with us, and their children's education is too often shamefully neglected.

NICHOLAS MURRAY BUTLER

COLUMBIA UNIVERSITY

VIII

DISCUSSION

SPELLING REFORMS IN FRENCH AND ENGLISH

The writer does not wish to take sides in the discussion now going on in this country, not being an Englishman by birth. All he wishes to do is to offer a comparative study of the problem of spelling reform in France and in English-speaking countries, and thus hopes that he will not be accused of being a meddler. He has devoted a good deal of time to the study of the spelling reform in France,[1] so naturally when the question was taken up of the reform of English spelling he was deeply interested and followed the debates eagerly. He may be wrong in thinking that the following observations made from a French point of view may be of some interest to those who are accustomed to look at things from the English standpoint—the reader shall judge for himself.

It was very amusing to see, in the last few months, the leaders of the movement for reform in this country pointing out how very sensible the people in France were who had to face the same problem of changing their orthography, while those of France were loudly praising the progressive attitude of America in the matter and holding up Yankees as examples to their countrymen.

As reformers on both sides of the Atlantic have so far achieved very little, expressions of sympathy would have been better in place, in fact, than mutual compliments. But what is especially worth noticing is that they might have spared themselves the trouble anyway, as the problem in both languages concerned is a very different one. This, at least, is the writer's firm conviction, and this is what he proposes to show in the following pages.

When everybody agrees that a thing is bad, one must try to

[1] See his articles in *Modern language notes* since December, 1900.

reform it. But before taking this step, cautious people will begin by asking the question: *Is a reform possible?* In comparing the spelling adopted in French and English, the conclusion imposes itself that the answer to this question can not be the same in both cases.

To get an ideal spelling, *i.e.*, a spelling where the written word represents as simply and as naturally as possible the spoken word, two conditions are required.

First, one must agree as to the pronunciation. It is not indispensable, as many maintain, that there should be only one pronunciation; it will be enough if there is a good one and a bad one, or, let us say, one that is recognized as the standard pronunciation. The written language is always more conventional than the everyday spoken language; the conventional pronunciation can, therefore, be observed in spelling as the conventional style is used in writing.

In this regard France would be more favorably situated than English countries. Everybody would agree to take as a standard the pronunciation of the cultured class in Paris. But, owing to the fact that English is spread all over the globe, other centers than London might claim recognition, *e.g.*, New York or Melbourne.

As to the argument that pronunciation varies with time, one may remark, on the one hand, that spelling itself is not without influence on pronunciation; and on the other hand, that, if once spelling were regulated by fixt rules established by man's own will, changes in pronunciation would take care of themselves. Mr. Brunot has developed a scheme to meet this difficulty (p. 39-41 *La réforme de l'orthographe*, A. Colin, 1905).

That is, after all, of comparatively little importance. The chief condition for a systematic orthography is to own a uniform and consistent system of signs, or letters. And here the two languages, French and English, have practically nothing in common, nothing that indicates any relationship of their respective spellings. French has such a system; English has not. In French there are innumerable exceptions to the principles of orthography, but nothing prevents from making those

exceptions comply with the rules. In English there are no exceptions that can be made to comply with the rules, because there are no rules; or, at least, if those rules exist they are so difficult to discover and so hopelessly entangled that practically it is the same as if they did not exist at all. Thus, while in French you can speak of a *reform* of orthography, in English you must speak of a *creation* of an orthography.

We take the report of Professor Brunot to the Minister of Public Instruction in France, which was published in the *Revue de Paris* (1 and 15 Nov., 1906). The author enumerates the many spellings adopted in French for one sound. He shows, for instance, that the vowels offer the following varieties: the sound *a* is expressed in 13 different manners; the sound *e* (*ouvert* or *fermé*) in 32; the sound *i* in 17; the sound *o* in 20; the sound *u* in 13; the sound *ou* in 13; the sound *eu* in 12. Now suppose you double, or treble those figures, still you would change nothing in this fact: all those forms of spelling serve always to express respectively one of the sounds *a, e, i, o, u, ou, eu,* and whatever signs you have *exceptionally* to represent them, they are always reducible to one of those primitive signs. There exists a standard sign for each sound, and you need only do away with the exceptions to obtain uniformity and consistency—they may be individual exceptions (*oe-eu,* in *oeil, euil*) or groups of exceptions (*voeu, soeur, oeuf—veu, seur, euf*).

Whoever has followed the discussion of the spelling reform in France, that has now been going on for several years, knows of the sturdy opposition of the conservatives, especially of the French Academy. The reformers have grown very timid gradually, but even in their most modest claims they have endeavored and succeeded in proposing reform *by rules,* while individual cases were always regarded as being of secondary importance. English reformers in striking their "audacious" blow a few months ago, had to pick out one by one three hundred words, when at the very same moment the timid French reformers proposed four or five little rules which will, when accepted, affect certainly four or five times as many words as the English list contains. Yet, remember that one of the in-

troductory sentences of the *Rapport Brunot* declares the attitude of the commission to be this: "*Un point était acquis, on ne s'attaquerait systématiquement à aucun des vices de l'orthographe francaise.*"

In two lines they have been able to solve the vexed question of the grave and acute accent in French; they have further declared that the sound *j* should always be exprest by the letter *j* (instead of often now by *g* or *ge*); they have taken a simple but far-reaching step towards solving the question of double consonants, and so forth. In short, the French reform can be made and will be made by reducing to rules exceptions, and by reducing subordinate rules to general rules. The *existing* principles will be applied strictly instead of loosely—this is all.

Let us now try to show that a similar "reform" is not possible in English, that the lack of rules and principles, or their hopeless entanglement, is an obstacle that can not be overcome.

Here is a very simple example.

Mr. Brunot told us that there were twelve ways of spelling the French sound *eu*. In English, one must admit it, there is not such an abundance; we see only four ways to express the sound corresponding to the French *eu;* they are illustrated in the words: *learn. tuft, rough, serve.* But to draw the conclusion—as some have done—that French orthography is more complicated than the English, would be very superficial. All the twelve French spellings *eu, euh, eut, oe, ue, ueh,* etc., are only modifications of the standard spelling *eu,* and can be replaced by it. Whenever you put *eu* in French it will always sound alike. But out of the four English signs *ea, u, ou, er* found in the words mentioned, which is the standard sign? None in preference to the other; none represents *the* sound which in French is *eu.* Moreover, those signs in English have not always the sound under discussion, but only occasionally: *ea* equals French *i* in *lean,* or *ĕ* in *dead; u* equals the French *iou* in *huge; ou* is also = *aü in loud;* and *e* is also = *i* in *Peter,* or *ĕ* in *lemon.*

The truth is that in English the value of the letters (single or compound) depends always upon their position in the word;

in other terms, the only comparatively fixed orthographic sign in English is the group of letters, but not as in most languages the single letter. In the word *learn,* it is not the *ea* which has the value of the French *eu,* but *ea combined with r.* But again, you must further say that the combination must be followed by another syllable or letter (*earning, learn*), otherwise it would be = French *i* (*ear, fear*). But again, you ought to make a restriction to the effect that the following syllable must not be a second word added as a suffix, otherwise it would be = French *è* (*fearless*).

Let us now take *ea* in another combination; before *d* you have it pronounced like the French *è: dead, lead.* However, if we have the combination representing a verb in the infinitive or present indicative, then it is the French *i* (*lead,* verb, in contrast with *lead,* metal); of course one must understand that it is only for those two senses. In the preterite of those verbs, spelled like the infinitive, the sound formerly mentioned appears again (*read,* or *read* in the past tense). Is this all? No, indeed. For it so happens that there is a group *ate* (*fate, crate, late*); now in a word like *create* one must know that *e* and *a* altho put in juxtaposition, do not form a group, but belong to two different groups, and one must read *cre-ate.* Which causes a new complication to arise, namely that while most words derived from this verb are pronounced accordingly; *cre-ation, cre-ator;* the derivative *creature* is pronounced according to the combinations in *feature;* but again one must carefully distinguish *ture* from *sure* as a group, for we have *pleasure,* like *leisure.* How simple and lucid all this is, appears clearly!

No doubt the history of the language would explain many of those complexities;[2] but it would not do away with them and would not suggest any means to remedy the situation, as we will see presently; in removing inconsistencies at one place you create another, or more probably two others, elsewhere.

The influence of the accent has not been mentioned yet. It is very great on pronunciation, and accounts for a good many

[2] Think only of the fact that the same letters in English must express different sounds from different languages, *e. g.*, *wine* (German *wein*), *vinegar* (French *vinaigre*); or *gibbet* (French *gibet*), *girt* (related to German *gürten*).

cases, *e.g.*, the difference of thé *a* in *oratory* and *oration;* but many do not seem to be affected by the accent: *alter* and *altitude* have both the accent on the first syllable, which is, however, differently pronounced.

Now, even supposing that satisfactory and consistent rules could be formulated for each case, and that all the groups of letters and combinations of groups were systematically classified, and exceptions regularized, what an immense number of signs there would be to keep in one's mind, as compared with the twenty-four letters of the alphabet in other languages (or at the utmost forty signs if one counts a few groups like the French *eu, ou, ch, gn,* etc.). And what fine distinctions you ought to keep in mind: *nose, diagnose,* but *lose; cre* before a consonant (*credit, crest*), before a vowel (*cream, creek*), before *w* (*crew* and *few*); *ane* at the end of a word (*cane, lane*), and at the beginning (*anemone, anew*); *eve* in *evening* and in *relevant; ug* in *rug, dug, buggy,* and in *huge, bugle; ow* in *now* and *snow, how* and *low.*

From what precedes it seems clear enough that a "reform" of spelling, in the sense used in speaking of the reform of French spelling, is not possible in English, or if possible,—namely if one aims at a regular use of the groups of letters and combinations,—is practically useless. To do something of actual value, the letters ought to be taken as the regular signs instead of the groups, and this means, as we said above, nothing short of a "creation" of English orthography.

Now this "creation" is not impossible; it may be impossible to induce English-speaking people to use it; but theoretically it is feasible. One might adopt either one of two ways. To adapt for English spelling the letter system used in Germanic or that of Latin countries.[3] Or one might create a special system for English. The possibility of adopting such a proposition at present is so far removed that we need not consider it. But English is so different from other languages that some of the consequences might be shortly mentioned. While in French you could reform the spelling without really affecting

[3] The two systems are not very different. Compare *e.g.*, the pronunciation of the word *Théâtre* and *Theater* in French and German, it is almost the same. But see in English; the French would spell *siaiteur* what English spell *theater!*

the language (we do not now speak of the esthetic point of view), in English you could not. Let us illustrate this point, which has never been taken into consideration, at least in the literature on the subject that came within our reach.

Suppose that in French they should decide one day to write phonetically *tan* insteads of *temps;* then the compounds would be *tanporel, tanporiser, tanpete*—the word-family remains untouched. But in English take words like *life, lively, to live* spelled according to pronunciation, the change of orthography would dissociate the family (*laïfe, laïvely, to live* in the phonetic French spelling, for instance), the vowel being always the chief element in the word. Or see words like *clean* and *cleanliness; fear, fearless; creation, creature; please, pleasure; dine, dinner,* and so forth, and compare them with the French examples given; there remains no doubt that the language would lose a great deal in simplicity and clearness by reforming the spelling. A few people will pronounce *derivation* (i = ai) like *derive,* so as to match the pronunciation of two words so clearly related; but no one ever say *descra-iption,* or *diva-ison,* to match *describe* and *divide.* A change in the spelling would considerably weaken the relation. A very striking example is the work *breakfast,* from *to break* and *the fast,* the sounds of the two primitive words as well as their length have been changed in the compound, so that if you change the spelling, the meaning of the word, which is evident to every one—not only to scholars, for this is not the famous argument of etymology—would no longer be understood; and yet if one wants to bring the spelling nearer to the pronunciation, this will be the unavoidable result. Compare again the word *déjeuner* in French; whether separate or whether together the two primitive elements *dé* and *jeuner* are always pronounced alike.

Here we must be allowed a parenthesis: It has been said often that a reformed spelling would render English easier to foreigners and thus make it fit to be the international language. To achieve this end English ought to be made phonetic at least as much as other languages. Supposing, for a moment, that the difficulties just indicated did not exist, the result would be

to render English not easier but much more difficult to foreigners. The spelling may be just as easy, but the language will be more difficult, for it is nothing else as much as its orthography which makes English *easy* to foreigners: English has taken in foreign words by the thousand, keeping their spelling, modifying only their pronunciation. So a foreigner, tho not knowing the pronunciation, recognizes, however, the word at once. Take words like *pension, nation, issue, social.* If they are written in any other fashion, no matter what system you adopt, they will no longer be recognized. In the French system, *e.g.,* they would be something like *pencheunne, nécheunne, ichoue, sôcheule.* Instead of knowing, so to speak, beforehand a great many English words, the foreigner would now find it as hard to learn as, let us say, Russian. The importance of the argument will be better understood if we say that scholars have counted about forty per cent. of Norman words in Chaucer, and in more modern writers like Gibbon and Macaulay as many as fifty and even seventy per cent. words of Latin origin. Max Müller felt inclined to call English a romance language. What is true of the connection with Latin languages will be true in part also in connection with Germanic tongues.

We do not, however, lay considerable stress upon the argument thus presented, for, after all, if English has to be improved it must be chiefly to benefit those whose native tongue it is. Yet it must be kept in mind that if an English with changed spelling makes English much harder for foreigners, it will at the same time render foreign languages much harder for English people. If the stranger no longer recognizes his own words in English, the Englishman in his turn will no longer recognize his words spelled in the new fashion, when he finds them elsewhere. *Nation* will be as unknown to him in French and German as *nécheunne* (or another such) will be in English for a Frenchman or a German.

In conclusion we should say that it is a surprise to us how any one has been able so far to have an opinion on the reform of English spelling, since we have never been told as yet whether the leaders in this movement wanted a real reform which means

here a creation, or just simplification in a few details. Their obstinate silence as to their final purposes is, to say the least, extraordinary. One can not find out, from what they have proposed today, which method they propose to adopt: when they spell *thru* instead of *through,* we see that they have done away with a few superfluous letters but at the same time they have created a possibility of confusion in the mind, since the *u* of *thru* is now pronounced like *o* in *who;* from this it seems that they certainly do not care for phonetism. But again when they break the uniformity of the rule of the past participle ending in *ed,* to spell a few in *t,* like *exprest, fixt,* this seems to be phonetism to the utmost, phonetism at the expense of simplification.

Therefore any opinion today can only be conditional.

If the leaders mean only to mend in a few places the present spelling, without aiming at any thoro and systematic changes, the storm brought about by their list of 300 words is more amusing than anything else. In the eighteenth century, the French Academy, thanks to three or four little rules, changed at a single stroke the orthography of about 5000 words of its Dictionary, which counted then something like 18,000 words. And no catastrophe took place. Now Webster's Dictionary counts, we are told, at least 110,000 to 115,000 words; one-third of this figure would be aboue 37,000 words—which means that it would require about 125 lists of 300 words to bring about a change equivalent to that of 1740 in France.

But if the leaders of the movement mean to bring about a change which would have the same results as a spelling reform in France, that is to say, if they mean to create an English orthography, there seems to be very little chance for success; then the French spelling reform (altho achieving the same end) would not begin to compare in importance with the parallel movement in English countries. It would be a complete overthrow; it would practically mean the adoption of a new language.

ALBERT SCHINZ

BRYN MAWR COLLEGE

IX

REVIEWS

Maîtres et Parents—By PAUL CROUZET, Professeur au Lycée de Toulouse. Paris: Librairie Armand Colin, 1906. 300 p. 3 fr. 50.

It will be of some interest to American teachers, who are interested in a closer coöperation between the home and the school, to know that much attention is being given to this subject in other countries. This volume gives one the impression that France is a little more backward than America in the development of that close sympathy which we regard as a most valuable factor in the modern educational life. The book is addrest to teachers of both primary and secondary schools as well as to parents in all classes of society. While it does not claim to promulgate a new theory, it deals with the subject in such detail as to suggest that if its doctrines are carried out by French teachers, a marked change will be the result. The author deals with the subject in both a theoretical and practical way, and makes a strong appeal to teachers and parents to accept the responsibility which properly belongs to them.

In 1903 a circular appeared in the French newspapers and pedagogical periodicals, asking the coöperation of parents and teachers because of the introduction into the lycées of the system of options. The *Bulletin de l'Enseignement Secondaire de l'Académie de Toulouse* opened its pages for a free discussion of the general theme. Much information was obtained in this way which M. Crouzet has used in the preparation of this volume. The author has also made some study of the systems in Belgium, Germany, England, and America, in all of which countries more has probably been accomplished than in France in securing a close relationship between teachers and parents.

The book is divided into two parts. Part First deals with primary schools, and Part Second with the secondary. In Part First the author sketches one or two successful attempts at

coöperation, as for example in the Ecole Turgot in Paris, which has held successful parents' meetings at the opening of the school year. The following arguments are presented in favor of coöperation:

1. The home is the first school of every child. There he gets his first training and spends most of his time.

2. Things learned at school should be the subject of attention in the home.

3. The home develops the spirit of tradition, the school the spirit of progress. The home seeks to impart personal belief and opinion, the school to give a world point of view. All this is valuable, but should be harmonized.

The following direct means of coöperation are suggested: First, cards of admission containing statements from the parents concerning the child's mental, moral, and physical characteristics. Second, brief circulars stating the aims of the school, sent from the school to the parents, with the child's program. Third, parents' meetings held early in the year, when the aims and ideals of the school are briefly stated. Fourth, school papers reflecting the various attitudes of the school. Mention is made that in the United States a local weekly often devotes a column regularly to such information. Fifth, notebooks or reports, sent by post to the parents, showing the mental, moral, and physical progress of the child. Sixth, teachers and parents should exchange calls. Seventh, the family should aid the child in preparing his home work by providing a quiet, airy room for study. Books recommended by teachers should be read with the children. Other means of inviting coöperation are suggested as follows: Opening schoolhouses for lectures and social occasions in the evening; clothing bureaus to supply needy children; parents' circles; education societies; instruction in domestic science; classes for mothers; a freer discussion of educational questions in current magazines and papers.

In Part Second the author first discusses the difficulties which arise especially in the field of university training. Parents often have too much confidence in the higher institutions. The heads of these higher schools insist upon too much for-

malism and red tape for the parent to reach them. Many professors object to any interference or advice from parents. Some professors and instructors insist that their responsibility closes with the lecture hour. The large number in the classes renders individual acquaintance quite impossible, to say nothing of knowing the parents. Some colleges are controlled by a merely commercial spirit.

Second, the difficulties on the side of the parents. The parents are not socially homogeneous. They lack sympathy and are often critical rather than helpful. They are quite inclined to take sides against the teacher when questions of discipline arise. Being ignorant of the fundamental principles of education, they are forever insisting that the school should be more practical and utilitarian. This attitude is quite familiar to American teachers, especially in sections where public sentiment has not been highly educated.

Among the practical suggestions for bringing about coöperation in secondary schools are the following: The results of physical examinations should be sent to parents as well as filed in the school. Every effort should be made by the teachers to know their pupils, and for this purpose careful records should be kept from the time they enter the school until they withdraw. On the opening day of school the whole building should be open for inspection. At an assembly of parents the course of study, etc., should be fully explained. Some effort should be made to have parents know what the school attempts to do, as in the case of the primary schools. The interest of the parents should be enlisted in the support of proper discipline and also in providing suitable conditions for home study. An attractive, well-illustrated circular of the lycée should be sent out yearly. On prize day, speeches urging coöperation should be made. All public days and social occasions should reflect the real life and spirit of the institution. The alumni associations should keep in close touch with the school and not exist merely for social purposes. Committees of parents and teachers should be organized to deal with new problems which are constantly arising. It should be made easy for parents to visit all schools. Educational excursions

should be open to parents in case they wish to accompany their children. Parents' associations and education societies should be encouraged, and professors and instructors should be social factors in the community.

The author in closing recalls the remark of Montesquieu to the effect that "we receive three educations—the education from our parents, the education from our teachers, and the education from the world," and declares that the final result of full and free coöperation of teachers and parents will be that these three educations, instead of being at variance, will blend together and complete one another.

If this work, which is so modest in its tone and so thoroly constructive and helpful in its subject-matter, deserves any criticism whatever, it is in the fact that too little emphasis is placed upon the education of the people generally to broad and wholesome ideals of education. It is not merely that parents should know what their children are doing, how the schools are conducted, and what lessons are learned, but they should be alive to those larger considerations which treat life as a unit, and see in true perspective the relations of training and culture. Both in the school and in the home there are certain spiritual elements which can not be weighed and measured, but which are of tremendous importance. These factors find their expression not merely in the studies, even those which refine and elevate the soul like music, art, and literature, but rather in personality, in noble and unselfish conduct, and in desire to serve the community. In other words, there should be developed in every neighborhood, where human beings dwell, a social spirit which is the same in home, church, and school, and which acts as a solvent for all those lesser factors which contribute to the growth of the individual.

SAMUEL T. DUTTON

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

Psychology: general introduction—By CHARLES HUBBARD JUDD, Professor of Psychology, Yale University. New York: Charles Scribner's Sons, 1907. p. 389. $1.50.

A decade or more ago a wave of enthusiasm for psychology as applied to education swept over this country. There was much talk of the "new psychology," the study of mind by experimental methods, and practical educators and the public at large promised themselves extravagant things from its application to educational problems. At the present day any one who is familiar with the trend of educational thought is obliged to admit that the wave of enthusiasm has somewhat subsided, the ardor of educators for psychology has cooled, so that the attitude of many practical schoolmen on the subject of the value of psychology for the teacher is that of mild skepticism verging toward an even stronger expression of doubt. Some, claiming to quote from Münsterberg, assert that "Education and psychology have absolutely nothing to do with each other,"—overlooking the fact that Münsterberg never said and never intended to intimate anything of the sort, that he has always insisted that the results of experimental psychology which have to do with education should be at the command of the teacher, that he advocates the founding of psycho-educational laboratories for the study of educational problems.

Two reasons for this change of sentiment from enthusiastic hopefulness to skeptical toleration are evident. The first is the extravagant expectation in regard to what psychology might afford the teacher. Ignorance of the methods and subject-matter of psychology and an uncritical enthusiasm for anything in whose behalf great and revolutionizing, tho vague and indefinite, claims are made led teachers to think, without knowing why, that to psychology they were to look for the solution of all the practical problems of the classroom. Psychology was to make the dull teacher inspiring, was to assist the lax teacher in maintaining good discipline, was to imbue the incompetent teacher with ability, was to awaken interest in pupils, was to revolutionize the whole art of teaching, and usher in a new pedagogy.

Of course, such expectations were destined to remain unfulfilled. Psychology tries to analyze, to describe, to explain the facts of consciousness. It is a descriptive science, not a normative one. It does not lay down rules for conduct of any sort, much less does it offer specific directions for the art of teaching. And while it is true that a study of perception, association, memory, ideation, habit formation, etc., ought to furnish material which will make the teacher broader and more able to cope with the concrete situations of the classroom, the application of this material to classroom work requires a degree of skill and intelligence which is by no means invariably found in students of psychology. Thus these vague and extravagant expectations, doomed from the outset to disappointment, have given place to a skeptical despondency as to any benefit that education might derive from psychology.

A second reason for this change of feeling is the kind of psychology that has been presented to teachers. Experimental psychology, arising from the practical needs of the astronomers in determining individual differences in perceiving and recording the transit of a star, has emphasized the receptive, sensory aspect of consciousness at the expense of the expressive, motor aspect. Now, however interesting it may be from a scientific point of view to determine the laws of color mixture, to study the fluctuations of minimal sounds, or to ascertain the relative distribution of temperature and pressure spots, there is little in this which is of direct practical advantage to the teacher who is trying to train boys and girls to read, write, compute, and think about what they see around them. The despondency over the value of psychology for the teacher is thus partly the fault of the psychologists.

In the general introduction to psychology which Professor Judd has given us we have a decided departure from traditional methods of presenting the subject. Thruout the work the sensory aspect of consciousness is subordinated to the motor or activity aspect. And herein lies the value of this book for the teacher. The teacher is occupied day after day in training activities, in developing abilities to react to the situations of business and social life in the most efficient pos-

sible manner. Of what good are the reading, writing, and arithmetic if the child can not perform these acts more efficiently than he otherwise would? Of what value the geography and history except to enable the child to tell another or himself something about his own or distant lands,—to *do* something with them? This is the whole burden of education,—that the child may think and act more efficiently. Therefore it is that the analysis of mental life from the standpoint of activity, of attitudes toward situations, is of vital interest to the teacher in furnishing him with a general point of view from which he may survey his task.

Professor Judd indicates in his preface the four basic principles which characterize the treatment of mental phenomena in this work. 1. The functional view is adhered to thruout. 2. The genetic method of treatment is followed, using genetic "in its broad sense to cover all that relates to general evolution or individual development." 3. The physiological conditions of mental life have been emphasized, showing how the sensory stimulus goes over into a motor response, and how the principle of the sensori-motor arc applies even to the highest forms of mental activity. 4. The dominant importance of ideation as a unique and final stage of evolution is strongly insisted on. "This work is intended to develop a point of view which shall include all that is given in the biological doctrine of adaptation, while at the same time it passes beyond the biological doctrine to a more elaborate principle of indirect ideational adaptation."

After an introductory chapter on the methods and purposes of psychology, the evolution of the nervous system from unicellular organisms thru hydra, the starfish, the stag-beetle, the frog, and various mammals to man is clearly and concisely sketched. Here the author has made free use of the abundant material furnished by researches in comparative neurology and psychology, and has produced a chapter of the greatest value for a comparative survey of the nervous system. The discussion of the human nervous system gives a richly illustrated account of the sensory and motor neurones together with the connections in the cerebrum and their localization of func-

tion. It is a pity that a few paragraphs on the development of the human nervous system from the embryo were not inserted here, as they would have added to the value of this section for the student.

Nevertheless it is consciousness, not neural activity, that the psychologist studies, and while making every use of neurology the author distinguishes sharply between the two. Consciousness is discust under five heads: (1) Sensation factors. (2) Relations between sensations. (3) Attitudes,—including feeling, interest, and attention. (4) Memory contributions to experience. (5) Ideational relations.

In the treatment of sensations the chief facts of sense psychology are adequately stated and everywhere the functional relation of sensations to motor processes is emphasized. The evolution of the eye as a perceiving organ is illustrated by numerous cuts, and the finer structure of the organs of smell, taste, and touch is described and figured in accordance with the latest histological researches.

Space, time, and unity are treated as functional relations between sensations developed by the motor activities involved in perception. The dependence of space perception upon motor reaction to a situation as a whole is conclusively brought out in the discussion of geometrical-optical illusions and the perception of depth. "Orderly arrangement of sensory qualities into a spatial series is not determined by the qualitative character of sensations as they are given in experience, but rather by the way in which a practical series of responses is worked out in the course of the individual's effort to use his sensations in the adjustments of life."

Perhaps the most important chapter in the book for its clear statement of the activity point of view is that on "Experience and expression." In this it is shown "that there is a universal relation between consciousness and bodily activity." "Every change in experience, whether it is initiated by a change in the sensory stimulus or by some internal cause, is accompanied by changes in muscular tension." The most important factors in our lives are the mental and physical attitudes which we take or the responses which we make to given

situations. These attitudes, when repeated, become habits, grow automatic, and constitute character, intellectual, social, moral. The most general examples or types of attitudes are attention, "the concentration upon certain factors of experience and the rejection of others," and the feelings, personal attitudes which arise from ease or difficulty in the adjustment of motor tendencies to each other. When motor tendencies clash the conflict is disagreeable, when they are in harmony so that they mutually further each other the situation is pleasant. Rhythm, in so far as it is agreeable, coincides with certain organized forms of behavior.

Instincts are inherited tendencies to forms of activity, and habits may either result from a conflict of instincts, or they may "develop by a process of selection from among the diffuse activities which appear whenever there is no definite mode of instinctive behavior which serves as a foundation for development." An example of the latter class of habits is that of writing, which is analyzed here in some detail. Every acquisition of an act of skill, and indeed all carefully organized, purposeful thinking, involves just such a selection from among diffuse activities and a suppression of those which are superfluous.

The author justly considers ideation as that form of reaction which peculiarly differentiates man from other animals, but his discussion of that subject is perhaps not as discriminating as could be desired. While avoiding the confusion of some contemporary psychologists in applying the term idea promiscuously to percept image, and concept or reference attitude, he specifically attributes it to the revived sensory experience better known as memory image. Yet memory is defined as phases of experience recalled from the past and consciously related to the past, while idea, tho pointing to a range of past experience, makes use of it with reference to some present act. In the succeeding chapter on language, with which every teacher should be familiar, the difficulty of such a close identification of idea and memory image is felt and the active attitude, the forward, purposive aspect of idea is more strongly emphasized. In this chapter the social character of language and of many

of the details of thought is pointed out, and the development of the number system is sketched.

The formation of concepts, judgments, reasoning, and belief is treated from the same genetic point of view, with the concept of the self used as an example. Voluntary choice is shown to be a complex of conflicting tendencies to action, in which one tendency supported by allied impulses survives while antagonistic tendencies are more or less completely inhibited. Any such voluntary act must be considered in relation to its background of preceding activities for its complete understanding. "Behavior is a necessary and ever-present physical correlate of experience, and at the same time a product of all those organizations which lie back of experience itself."

The foregoing outline of some of the salient features of the book will serve to indicate why it is of especial interest to those who are engaged in the training of human activities. The thoro-going recognition of continuity in the development of neural structure and function from protozoa to man, and the treatment of consciousness from the standpoint of motor adjustments and their coördinate mental attitudes are distinctive features which make the work one of the most valuable contributions to psychological literature. While the language of the discussion may be a trifle difficult for the teacher, yet if he perseveres and masters the thought he will be amply repaid in the new and stimulating outlook on mental life here presented.

J. CARLETON BELL

BROOKLYN TRAINING SCHOOL FOR TEACHERS

Principles of secondary education—By CHARLES DE GARMO. New York: The Macmillan Company, 1908. 299 p. $1.25.

The author of this volume has undertaken a great piece of pioneer work; articles in educational periodicals and individual chapters in general educational works have illuminated diverse phases of secondary education, but no American has hitherto attempted a comprehensive survey of the whole subject. Here is presented a definite plan of treatment, whose full significance, however, can not be measured until the author has given us

its sequel, in which he promises to consider the aims of the high school studies and the processes of treating them. Some of his statements that now invite adverse criticism, will probably be justified in the later work.

The greatest value of the volume before us lies in the stimulus that it affords for classroom-work; the topics for discussion distributed thruout the sections of the book suggest at once to the college teacher others of equally potent interest. The author's statement that he is concerned in setting the problems before the student, rather than in advancing definite judgment amid conflicting opinions, determines the point of view of the reviewer.

The volume opens with a brief introductory chapter on the social and individual basis underlying American secondary education. In his plea that no single type of educational institution adequately meets the needs of our community, that adjustment to the individual is fundamental, essential, De Garmo follows the guidance of Stanley Hall, Baldwin, and Patten. It is to be noted, however, that certain sweeping statements in the introduction find a conservative counterbalance in the later chapters. An advocacy of the elective system in the high school (p. 22), to the point of adapting studies to the individual, becomes later on (p. 207) a division of students into larger groups or classes.

The practical teacher will center his attention on chapters ii, iii, iv, and v. They consider respectively the classification of studies into convenient groups (chapter ii), the function and relative worth of the study groups and individual studies (chapters iii and iv), and finally, the organization of the studies into curricula (chapter v).

De Garmo frankly avoids an order of the study groups based upon their importance in education; his arrangement considers only convenience of treatment; and wisely, for we are hardly ready for an evaluation of these study groups on the basis of their importance. His system of grouping seems to us to call for some qualifications. The separation of the various subdivisions of geography so that they lie respectively in the divisions of natural science and of economics, is likely to per-

petuate a condition of affairs that has been particularly inimical to the significance of geography in the scheme of high school studies. It would almost seem that if the author had followed out the lines of thought of Kant, Karl Ritter, and Kirchhoff (p. 93 ff.), there would have been suggested to him a new group that would take its place between the purely scientific and the historical group, a group in which "the reciprocal relations between earth and mankind" are considered, the union of the "world of nature with the doings of men" (p. 96). The author admits (p. 52) that other classifications might be made, and it seems to us an open question whether the entire group of subjects separately classed as economic sciences should not be regarded as applications of various subjects in the earlier groups.

With the detailed study of the educational function of the various study groups and the subjects within those groups, we reach the heart of the book. In making *analysis of content* the basis of discussion for each one of the subjects, he affords us a hint of the practical application that his second volume will bring. The discussion of the function and worth of history (pp. 147-152) foreshadows distinctly his views on method of presentation in the secondary school. We have (p. 70) a suggestion of the kind of problems that will bind the mathematics and applied sciences; on p. 116, a distinct intimation of his attitude on the teaching of literature; he is firmly opposed to the "bare husks and accessories of literature, as well as to the preaching of ethical sermons," both of which seem to him far removed from the proper function of literary study.

It is interesting that he advocates (p. 119) as part of the literature course a systematic attempt to interpret foreign, especially ancient, classics thru English translation. Such an attempt as the one he urges, has indeed been made; it has proved successful only when the teacher to whom such work is intrusted is completely at home in the thought-content of the foreign literary work.

Sound and scholarly is that section of the book which discusses the function of literary and linguistic study, tho one might hesitate to subscribe to the statement that "grammatical

study *originates and develops* the language consciousness" (p. 106). How does such a statement tally with the other (p. 103), that grammar is nothing more than a "systematic exposition of the forms which speech assumes in endeavoring to mirror with exactness the mental processes in which a language originates"?

In the question of modern language teaching the author wisely puts the emphasis on language consciousness and language sense (p. 131). He takes distinct issue with the prevalent mode of modern language teaching that has in the main been productive of failure and disappointment. With his arguments for the value of the study of ancient languages (p. 126) and the prosecution of systematic work in the vernacular (p. 137), as well as his vigorous plea for esthetic education in the secondary school course, the reviewer finds himself in complete accord.

We repeat, the book invites discussion; and this prompts to a final observation that is as far removed as possible from captious criticism.

An urgent need of this work, if it is to be truly serviceable, is a more extensive bibliography than the present meager references furnish. Everywhere the conflict of opinions is suggested; the reader, therefore, especially the one who does not scrutinize the book in advanced college classes under guidance, needs precise references to authorities of distinct significance, precise even to chapter and page. The habit of vague references (as on p. 29 to Aristotle, *Politics,* Book VIII) is a source of irritation to an earnest student. Again, on matters of vital importance, where many equally weighty voices deserve recognition, one authority does not suffice; thus, in the discussion of the language concepts of primitive man (p. 99), the student should be reminded that besides Whitney, the opinions of men like Geiger, Steinthal, Noiré, Max Müller, and Schrader are entitled to consideration.

JULIUS SACHS

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

English grammar—By GEORGE R. CARPENTER, Professor of rhetoric and English composition in Columbia University. New York: The Macmillan Company, 1906. 211 p. 70 cents net.

This volume, in the author's opinion, represents the amount and kind of grammatical theory and practise in analysis most suitable for secondary pupils. From this statement, it is inferred that the book is especially designed for use in high schools and academies. The author's method of treating subjects may be illustrated by a few definitions. "What grammar is." In reply to this, he asserts that "Grammar is a systematic description of language." Under this definition, English grammar must be a systematic description of the English language. Whether this is a clearer or better definition than, "English grammar is the science which teaches the forms, uses, and relations of the words of the English language"; or, "English grammar is the science and art of speaking and writing the English language with propriety"; or, "the science that treats of the principles that govern the correct use of language in either oral or written form,"—must be left to those who like to revel in nice technical distinctions concerning the laws governing definitions. They have the merit of being simpler and clearer than the formal definition given by the author. As much as may be said in this connection is, that a definition should make the thing defined simpler and more easily understood than the term defined.

Again, his definition of language is queer: "Language is a system of sounds, and of written signs representing these sounds, used to express thought and feeling." This is not a clear-cut statement of a thought or of related thoughts. "System," "sounds," and "signs," all need explaining as much as does the word "Language." There is evidently a lack of close thinking on language in this definition. Language is any means by which we express our thoughts and feelings.

Some topics are admirably presented, and they indicate considerable research and some skill, but others are weak and empty. Judged from his strongest chapters, the author is evidently capable of doing much better work than is repre-

sented in this book, had he brooded over his subjects without prematurely pipping them.

In a remark parenthetically made on page 15, the grouping of the verb "be" is one of the very best I have ever seen. Since this is a book for high school pupils, the author would have strengthened it very materially by showing how the technical grammatical terms that we use are derived from Latin and Greek words. Had some little consideration of this kind been given to "The adjective," for instance, page 18, it would have added much to the pupil's interest, while affording him a clue to the literal meaning of the word. The definition of the "Adjective" as it now stands, is weak and obscure, and it is only partially correct.

On pages 29 and 30 is the statement: "It is a fundamental principle of the language that words are not necessarily distinguished by their forms as filling one or another function in a sentence." The Canadians speak of the *work* a word does in a sentence, and on this side of the line, we say "The use, or office," of a word in a sentence. The word "function" is now made to do all sorts of things from biology to the most advanced branches in the higher mathematics, but the latest duty imposed on it is pitchforking it into an elementary grammar without once telling the pupil what "function" is.

The word "composition" is also used in a new sense. Combining the two words "ink" and "stand," the word "inkstand" is formed, and this is called composition. Composition in one sense, is a kind of mixture; but the word "composition" is familiarly used in another sense by all grades of pupils, and certainly this new use is no improvement on saying "that two simple words may be united to form a compound word."

Under "How to parse a noun" on page 70, the noun "dog," is said to be common gender. Is it really? There is as much reason for this statement as to say the nouns "horse," "gander," and "rooster" are common gender. "Dog" is masculine, "bitch" is feminine, or the grammarians in England and the United States are wrong. There may be such a way of disposing of grammatical properties along the Atlantic slope; but it has not yet reached the Mississippi Valley.

The definition of a Clause, page 72, will answer as well for a sentence as for a clause. A clause is always a dependent element in our language, but the author's definition fails to show this fact.

The treatment of relative pronouns is very thoro, and shows conclusively that the author can do good work when he takes time enough and centers his thoughts on what he is doing.

The discussion of *shall* and *will,* however, is labored and rather foggy. Yet it is on a higher level than most of the subjects treated of in the book.

On pages 142 and 143, under the "Uses of the infinitive in Ing," it would have been more in accordance with established usage to call it a verbal noun or a participial infinitive instead of an infinitive. There is, however, a very light shadow of authority for the author's treatment of this subject. Again, on page 147, in the expression—"A loving child," loving is called a participle used attributively. As a matter of fact, loving is an adjective, nothing more, nothing less. Bain, in his *Higher English grammar,* gives a very interesting, but brief, account of verbal noun infinitives in "Ing." Probably the best argument for not pressing "Ing" into service as an infinitive, is found in West's *English grammar,* page 145. The learner will have trouble enough with the simple infinitives, verbal nouns, participles, and gerunds, without the interjection of this additional disturbing element into his grammatical nomenclature. However, a scientific writer can coin whatever new words he needs to express his thoughts, or elucidate his meaning, and no outsider has a right to object, if these terms are always used in the same sense.

Taken as a whole, one wonders why the author ever wrote this book. There is certainly no particular niche in school work that it fills, and, besides, a book for high school pupils should be a positive text, not a colorless one. It should also give the pupil who studies it, the ability to know how, by the aid of well-established grammatical principles, to test any ordinary sentence, whether written or spoken, by the laws of our language. A generation or two ago, grammarians who possest logically trained minds and sound scholarship, wrote

grammars to be used by the young folks of this country. Such men as Greene, Butler, Bullion, Kerl, and later Reed and Kellogg, wrote such books. Whether these men left any living successors may well be questioned, judging from the annual output of grammars thrown on the market in this country.

The study of grammar should build up in a pupil's mind a substantial body of positive knowledge, so that when he hears or reads a sentence, he can tell, by the application of his knowledge, whether the sentence is correct or incorrect, and why. The idea that a child will absorb this knowledge by use, and use only, is a fallacy. He should know how to tell a deformed sentence from a normal sentence, and to test such grammatically. He should know how to deal with deformities in language as well as in other subjects in his school course. A text-book should be something more than a mere sauntering thru a subject. The theory of looseness never develops mental fiber.

J. M. GREENWOOD

KANSAS CITY, MO.

Campbell's Text-book of botany. A university text-book of botany—By DOUGLAS HOUGHTON CAMPBELL. Second revised and corrected edition. New York: The Macmillan Company, 1907. $4.00 net.

The present volume purports to be a revised and corrected edition of the work issued in 1902, but upon what grounds the claim is based is probably known only to the publishers. With the exception of a few headings practically no attempt has been made to modify the text.

The sale of the first edition indicates a general appreciation of the book and is in itself a sufficient reply to the considerable criticism that was past upon the work owing to certain inconsistencies in the terminology and classification. While it is to be regretted that these features have not been eliminated in the present edition, it will be conceded that the portion of the book dealing with morphology has been written with a clearness of style and a scientific grasp of the subject not found in any other book of its grade.

Personally we regret that the author has followed the time-

honored custom of writing a text-book of botany, associating with his main discussion of the plant groups chapters on morphology, physiology, geological and geographical distribution, etc. The time has past when there is really a need for a general text-book of university rank. Botanical science has become so extended that it is undesirable and impossible to give a satisfactory treatment of its various provinces in a single volume. Professor Campbell's book is highly prized in university work by reason of his discussion of the biological and morphological aspects of the various groups of plants, and we believe that the value of the work would have been enhanced if he had confined his attention to this discussion. We trust when the work is really revised that a fuller treatment will be accorded to the algæ, and especially the angiospermæ which have not been given the prominence which they deserve. We would also like to see more of the comparative discussions which characterize his book on the *Mosses and ferns* introduced into the work; for not only is this the purpose of any study but the philosophy of a subject is the feature that is really worth while to the student. Much of the subject-matter will be forgotten, but the effort he makes in reasoning out relationships and interpreting characters develops him and becomes the valuable part of his work.

CARLTON C. CURTIS

COLUMBIA UNIVERSITY

A well printed and well edited Greek book is a joy to the eye as well as to the mind, and high praise can be given to the edition of Plato's *Apology and Crito* by Professor Flagg of the University of California, which has just come from the press. The introduction is particularly happy and the notes are useful. (New York: The American Book Company, 1907. 205 p. $1.40.)

The *Text-book in general zoölogy* by Professor Herrick of the Mississippi Agricultural and Mechanical College is a well-ordered and well-made school book for secondary school pur-

poses. (New York: The American Book Company, 1907. 386 p. $1.20.)

We have not been greatly imprest with the value of the readings on municipal subjects by Mr. Frederic C. Howe, and we see no cause to change our opinion by reason of having read carefully the *British city,* the latest book from his pen. The book contains a good deal of information, not all of it full or pertinent, but it is not presented with especial attractiveness or force. (New York: Charles Scribner's Sons, 1907. 370 p. $1.50.)

Modern scholarship has done much to add enormously to the interest of the Old Testament from whatever point of view it be regarded. Professor Kent of Yale University has just published *Israel's laws and legal precedents,* which is a thoro, accurate, and scholarly treatment of this exceedingly interesting subject. (New York: Charles Scribner's Sons, 1907. 301 p. $2.75.)

Professor William James is more frank than some other contemporary philosophers, as is shown by the title of his last book, *Pragmatism*—a new name for some old ways of thinking. His presentation of the pragmatic method is of course unique by reason of the author's own charming literary style, comprehensive knowledge of philosophy, literature, and philosophical principles, and great skill as an expositor. No serious student of contemporary thought will pass this book by. (New York: Longmans, Green & Co., 1907. 309 p. $1.25.)

The admirable *Bibliothèque de philosophie contemporaine* has just been enriched by a capital little study by Louis Proal of the French bar, entitled *L'éducation le suicide des enfants.* The subject is one that has not been thoroly treated heretofore, and both as a psychological and sociological essay the book deserves careful reading. (Paris: Alcan, 1907. 204 p. 2f.50.)

X

NOTES AND NEWS

Dr. Osler to Medical Students

At the annual award of prizes and certificates at the St. Mary's Hospital Medical School, London, Dr. Osler, Regius Professor of Medicine at Oxford University, made a noteworthy speech, in the course of which he said:

For final success the winner must have reserves, not merely capability and energy for a short run such as that in which they had been engaged, but endurance, or, as the expression was, staying power. Only those who by education had got mobile reserves would attain success. How might they acquire those reserves? Let them learn early to take the best possible care of the machine, never overdriving it or allowing rust or damp to accumulate in its bearings. Unlike any ordinary mechanism, the more they used it the more, within limits, they could get out of it. Healthy action in a well-built body was the best asset in the race. Let them not forget that as a class they were notorious sinners in these matters. If they did not work too hard they smoked too much or kept late hours or were indifferent about exercise, and the very best of students seemed to pay the least attention to Nature's laws. A delicate constitution, well handled, might develop unsuspected staying powers. They would be glad to know that in training they had only three subjects—science, art, and the man—he meant the patient. These were of equal importance. It was a very hard thing nowadays to get the right sort of science into our medical students. Unless scientific a man got no true perspective as he looked out on the world and man, and their work dealt with the most interesting and valuable bit of it, from one cause or another out of gear. What he meant was that a man needed an understanding of the methods of science, its meaning, and an inoculation of its spirit. It was an attitude of mind which at once, on the presentation of a problem, made a man burn until the solution was accomplished. Education was not worthy of the name scientific unless it imbued a man with this spirit. It should be inculcated from the start. But there were two great difficulties in the way. Sent into the medical school without the preliminary sciences over which they had to spend a hurried year stolen from the strictly technical part of their profession, it was small wonder if they never reached a vantage ground from which a good perspective could be obtained. If they had deliberately set themselves the task of devising a plan by which the all-precious investigating spirit, which, he repeated, was the very life of the physician, could be quenched, they could not have found anything half so effective as an

examination system which made the end and object of study the meeting of certain tests, and these not tests of capacity to act, to think, but tests of how far a man had made himself a talking machine or a human monotype on which an examiner might play. Of course, as a concession to human weakness, an examination now and then might be allowed—two or three only in a career, and those designed rather to bring out a man's knowledge of methods than to ascertain how far he was familiar with the minutiæ of medicine and surgery He would repeat the motto which he had been dinning into the ears of medical students for the last twenty-five years—"take no thought for the morrow." Let the interest in the day's work absorb all their energies, and the future, with the examinations, would look after itself. A devotion to science, a saturation with its spirit, would give them that most precious of all faculties, the sane, cool reason which enabled them to sift the true from the false in life, and at the same time kept them well in the van of progress. The students' whole energy should be directed to the knowledge of what was called therapeutics in the widest sense of that word. A hopeful sign of the times was that it was not by lectures that methods of treatment might be taught. He wished we could introduce what was known in Germany as the *Seminar*, in which, at a meeting between the teacher and the students, special literature was discust and special articles were read. We too often allowed the student to pick up his information in a haphazard, irregular fashion. It would be better if it was the duty of the junior member of a staff to carry out systematically special treatments with the students. He should be taught to prepare personally the various nutritive injections, and to know the different kinds of massage. One difficulty was that nurses had been allowed in the hospitals to do a great many things that the medical students should do. An all-important subject was psycho-therapy. At each school there should be some one interested in and conversant with modern methods. Let them once gain the confidence of a patient and inspire him with hope, and the battle was half won. Then again the action of the great drugs should be studied with every care—not of too many of them, but of a certain number. Let them remember, however, what Benjamin Franklin said—"He is the best doctor who knows the worthlessness of most medicines." The art was indeed long, and it was lengthened since the days of the father of medicine, but his famous aphorism was still the credo of the faithful physician, who, in his words, must not only be prepared to do what is right in itself, but who must be prepared also to make the patient, the attendant, and the externals coöperate.